Vol. 1043 Number 1

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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June 5, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

June 5, 1984 Volume 1043 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1042 O.G. 45 on May 15, 1984.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced in the *Official Gazette* at 1039 O.G. 142 on Feb. 21, 1984.

International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Apr. 13, 1984.

Board of Appeals Decisions Rendered In the Month of Apr. 1984

Affirmed	192
Affirmed in Part	17
Reversed	66
Total	275

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,109,829, Re. S.N. 574,691, Filed Jan. 23, 1984, Cl. 222/81, CONTAINER FOR METERED DISPENSING OF LIQUID, Alexander Kuckens, et al., Owner of Record: *Dagma Deutsche Automaten-und Getrankemaschinen-Gesellschaft Mit Beschrankter Haftung & Co., Reinfeld, Germany,* Attorney or Agent: Dale R. Small, Ex. Gp.: 311

4,147,836, Re. S.N. 574,668, Filed Jan. 27, 1984, Cl. 428/481, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, James Murray, Jr., Owner of Record: *James River Dixie/Northern, Inc., Norwalk, Conn.* Attorney or Agent: Ira S. Dorman, et al., Ex. Gp.: 164

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,819,075, Reexam. No. 90/000,544, Requested: Apr. 16, 1984, Cl. 214/505, DEVICE FOR LOADING A SKIP ONTO A VEHICLE, Christian Derain, Owner of Record: *Societe Nouvelle des Bennes Saphem la Neuve-Lyre, Eure, France,* Attorney or Agent: Richard Bushnell, Ex. Gp.: 310, Requester: Owner

3,850,798, Reexam. No. 90/000,549, Requested: May 2, 1984, Cl. 260/112R, METHOD FOR SEPARATING A POLYPEPTIDE FROM MICROORGANISMS, John Axel Sjoquist, Owner of Record: *Inventor, Uppsala, Sweden,* Attorney or Agent: Fred Philpitt, Ex. Gp.: 150, Requester: Roman Saliwanchik, Richland, Mich.

4,307,569, Reexam. No. 90/000,548, Requested: Apr. 27, 1984, Cl. 60/525, DOUBLE-ACTING-FOUR CYCLINDER STIRLING ENGINE, Stig Gustaf Carlqvist, Owner of Record: *CMC Aktiebolag, Malmo, Sweden,* Attorney or Agent: Richard G. Young, Ex. Gp.: 340, Requester: Owner

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Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to the registrant at the last known address having been returned by the Postal Service as unclaimed, notice is hereby given that unless the registrant listed herein, their assignee or legal representative, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Young Life Corp., Atlanta, Ga., Reg. No. 1,132,493, for the mark "NITRO GREEN LIFE" and design, Canc. No. 14,046.

ERMA S. BROWN,
Deputy Clerk, Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decision having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,671,523, Kurt Westphal, Werner Meiser, Ludwig Eue and Helmuth Hack, HERBICIDAL AGENTS, Interference No. 99,393, decided Sept. 30, 1980, claims 1–4 and 6–12.

Patent No. 3,818,258, Yasunari Shirouchi and Toshinori Urade, DISPLAY DEVICE UTILIZING GAS DISCHARGE, Interference No. 99,541, decided Oct. 21, 1983, claims 2 and 6.

Patent No. 3,921,273, Katsumi Kondo, Fumiyoshi Noda, Mikio Murachi, Yuji Watanabe and Masaru Usui, METHOD OF FILLING A CASING WITH HEAT INSULATING FIBERS, Interference No. 100,636, decided Dec. 7, 1983, claim 1.

Patent No. 4,015,975, Saburo Tamura, Tetsuo Takematsu and Hisae Haruta, COMPOSITIONS CONTAINING ALKYL 2-NITRO-5-(2', 4'-DICHLOROPHENOXY)-THIOBENZOATES, AND METHOD OF USE THEREOF, Interference No. 101,003, decided Feb. 24, 1984, claims 1 and 10.

Patent No. 4,060,988, George B. Arnold, PROCESS FOR HEATING A FLUID IN A GEOTHERMAL FORMATION, Interference No. 100,956, decided Nov. 22, 1983, claims 1–10.

Patent No. 4,160,885, Harold B. Ellicott and James P. Frank, ELECTRICAL SWITCH AND METHOD OF OPERATION, Interference No. 100,691, decided Mar. 21, 1984, claims 1–5, 9–13 and 15.

Patent No. 4,177,310, Robert W. Steeves, METHOD OF METALLIZING PAPER, Interference No. 100,630, decided Dec. 13, 1983, claims 1–13.

Patent No. 4,177,314, Robert W. Steeves, METHOD OF PRINTING PAPER, Interference No. 100,631, decided Dec. 13, 1983, claims 1–10.

Patent No. 4,180,285, Bobby J. Reneau, ARTICULATED BALL CONNECTOR FOR USE WITH PIPELINE, Interference No. 101,007, decided Feb. 1, 1984, claim 4.

Patent No. 4,185,529, Hiroshi Kitagawa, ELECTRONIC MUSICAL INSTRUMENT, Interference No. 100,768, decided Jan. 13, 1984, claim 11.

Patent No. 4,185,529, Hiroshi Kitagawa, ELECTRONIC MUSICAL INSTRUMENT, Interference No. 100,869, decided Dec. 19, 1983, claim 1.

Patent No. 4,208,416, John J. Baldwin, N-ARALKYL CONTAINING CYANOPYRIDINES, Interference No. 100,697, decided Dec. 8, 1983, claims 5, 6 and 7.

Patent No. 4,335,034, Joseph L. Zuckerman and John W. Bzik, THERMOPLASTIC COMPOSITIONS AND AUTOMOTIVE CARPETING BACKED THEREWITH, Interference No. 101,146, decided Apr. 4, 1984, claims 1–6.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of June 5, 1984

Re. 31,532	4,391,320	4,414,662	4,424,282
3,985,113	4,393,351	4,414,842	4,424,410
4,085,799	4,394,583	4,415,048	4,424,781
4,169,128	4,395,644	4,415,430	4,425,023
4,272,819	4,395,849	4,415,770	4,426,272
4,290,774	4,396,377	4,415,920	4,426,610
4,290,944	4,396,545	4,416,023	4,427,156
4,310,456	4,398,138	4,416,434	4,427,239
4,315,003	4,400,820	4,416,524	4,427,765
4,322,593	4,402,586	4,416,603	4,429,030
4,335,176	4,402,668	4,416,809	4,431,687
4,341,345	4,404,348	4,416,817	4,431,755
4,348,759	4,405,866	4,417,433	4,432,759
4,356,370	4,406,536	4,417,904	4,432,986
4,356,612	4,406,632	4,418,001	4,433,082
4,360,804	4,407,728	4,418,428	4,433,432
4,366,474	4,407,819	4,418,586	4,433,458
4,368,079	4,408,595	4,419,312	4,433,497
4,370,575	4,408,646	4,419,538	4,433,720
4,372,080	4,410,374	4,420,945	4,433,803
4,374,197	4,410,379	4,421,482	4,433,936
4,376,203	4,410,675	4,421,895	4,434,155
4,376,639	4,410,801	4,421,919	4,435,243
4,377,516	4,411,003	4,422,072	4,435,340
4,378,078	4,411,514	4,422,141	4,435,386
4,379,612	4,412,169	4,422,418	4,435,387
4,380,299	4,412,682	4,422,547	4,435,821
4,385,633	4,412,722	4,423,187	4,436,681
4,387,308	4,412,870	4,423,192	4,436,727
4,388,009	4,412,921	4,423,492	4,439,779
4,390,495	4,413,057	4,423,867	4,441,021
4,390,697	4,414,103	4,424,096	4,441,282

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7140
California	Los Angeles Public L ibrary	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 14, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Action New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-08-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	9-29-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	9-30-82
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-18-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	3-22-82
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	6-01-81
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	9-24-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	7-19-82
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	1-26-81
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-07-82
DESIGN, GROUP 290—K. L. CAGE, Director	1-18-82
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-03-82
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	6-10-82
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	1-10-82
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	5-14-82
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-15-81

Expiration of patents: The patents within the range of numbers indicated below expire during April 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,311,921 to 3,316,555, inclusive

Plant Patents ..... Numbers 2,730 to 2,733 inclusive

REEXAMINATIONS

JUNE 5, 1984

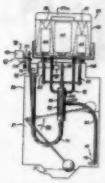
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 30,610 (200th)

FLUID MIXING AND DISPENSING SYSTEM

Leonard W. Gacki, White Plains, and Robert E. Daly, Farmingdale, both of N.Y., assignors to Picker Corporation, Cleveland, Ohio

Reexamination Request No. 90/000,370, May 5, 1983.
Reexamination Certificate for Reissue Patent Re. 30,610, issued May 12, 1981, Ser. No. 10,812, Sep. 3, 1975
Original No. 4,103,358, dated Jul. 25, 1978, Ser. No. 609,957, Sep. 3, 1975.
Int. Cl.³ B01F *15/02, 15/04*
U.S. Cl. 366—153



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11, 18, 20–50,** and **52–57** is confirmed.

Claims **12–17** and **19** were previously cancelled.

Claim **51** is determined to be patentable as amended:

51. A mixing system for mixing film processing chemicals with water to produce a mixed solution, comprising:

(a) a chemical supply means defining a plurality of volumes each containing a predetermined quantity of chemical to be supplied;

(b) the supply means including a plurality of frangible diaphragms each at the bottom of a different volume when the chemical supply means is in use; and

(c) mixing means coupled to the chemical supply means for mixing the chemicals with water to produce the mixed solution, the mixing means including:

(i) a reservoir for storing the mixed solution;

[(ii) water supply means for directing the water under pressure to the reservoir;]

[(iii)] *(ii)* a release assembly for releasing the chemicals into the reservoir; [and,]

(iii) water supply means for directing the water under pressure to the reservoir and including structure operative to introduce water into the reservoir prior to release of substantial portions of said quantities of chemicals and being further operative to introduce additional water after said chemicals are substantially completely released to effect mixing of the chemicals with one another and the water; and,

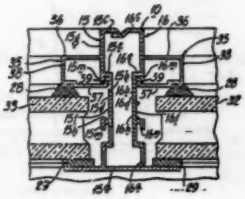
(iv) support structure for supporting the chemical supply means, the support structure including a surface having openings through which the release assembly operates to break the diaphragms and through which the chemicals are supplied to the reservoir.

B1 3,527,010 (201st)

BUILDING WALL CONSTRUCTION

Kazimierz J. Brzezinski, Willowdale, Ontario, Canada, assignor to Kawneer Company Inc., Niles, Mich.

Reexamination Request No. 90/000,145, Jan. 26, 1982.
Reexamination Certificate for Patent No. 3,527,010, issued Sep. 8, 1970, Ser. No. 730,530, May 20, 1968.
Int. Cl.³ E06B *3/62;* **E04B** *2/88*
U.S. Cl. 52—397



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3,** having been finally determined to be unpatentable, are cancelled.

[1. A wall construction comprising

a longitudinally split expansion mullion formed of:

a first construction element of generally T-shape having a crossbar with end portions and a leg extending longitudinally thereof having an end secured intermediate the edges of the crossbar, retaining means on one side of said leg for receiving a panel stop, and flange means along the other longitudinal end of said leg extending to the side of said leg remote from said retaining means;

a second construction element of generally L-shape having a long leg spaced apart from the leg of said first mentioned element on the side thereof toward said flange means and terminating along the inner face of said crossbar intermediate said end portions to provide relative motion therewith, retaining means of the side remote from said first construction element for receiving a panel stop, and flange means overlapping and interfitting with the first mentioned flange means to provide relative motion of said construction elements;

a pair of panel stops, one operatively positioned in each of said retaining means to define with said crossbar a pair of opposed panel receiving channels;

a pair of panels having their adjacent edges received in respective ones of said channels;

sealing strip means interposed between the edges of said panels and said crossbar; and

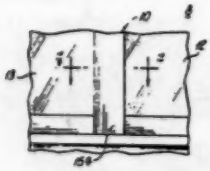
resilient means interposed between said panel stops and the edges of said panels whereby said second construction element will move with its associated panel edge relative to the first construction element.]

B1 3,769,775 (202nd)

BUILDING WALL CONSTRUCTION

Kazimierz J. Brzezinski, Willowdale, Ontario, Canada, assignor to Kawneer Company Inc., Niles, Mich.

Reexamination Request No. 90/000,146, Jan. 26, 1982.
Reexamination Certificate for Patent No. 3,769,775, issued Nov. 6, 1973, Ser. No. 187,901, Oct. 8, 1971.
Continuation of Ser. No. 881,070, Dec. 1, 1969, abandoned, which is a division of Ser. No. 730,530, May 20, 1968, Pat. No. 3,527,010.
The portion of the term of this patent subsequent to May 20, 1985, has been disclaimed.
Int. Cl.³ E04B *2/88*; E06B *3/62*
U.S. Cl. 52—731



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 2, having been finally determined to be unpatentable, are cancelled.

[

1. A longitudinally split expansion mullion for supporting a pair of panels aligned in a common plane in side-by-side relation, said mullion comprising:

a first elongated element of generally T-shaped cross section including an outer cross member and a leg integrally joined to said cross member intermediate opposite longitudinal edges thereof;

and a second elongated element of telescopically received within said first element and of generally L-shaped cross section having a first leg parallel to and movable toward and away from said leg of said first element, and an integral flange along the inner edge of said first leg away from said cross member extending toward said leg of said first element;

said first element including an integral flange along the inner longitudinal edge of said leg extending outward of and toward said first leg of said second element and in adjustable juxtaposition with said flange of said first element forming an inner wall portion of said mullion parallel to said cross member;

said first leg formed with an outer longitudinal edge terminating short of said cross member and adjustable toward and away from said leg of said first element, so that said cross member extends transversely beyond said outer longitudinal edge whereby no outer visible joints exist between said elements;

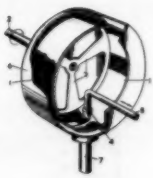
each of said legs being formed with an outwardly opening, longitudinally extending recess intermediate its opposite longitudinal edges and a stop retaining toe extending longitudinally along at least one edge of the recess for retaining engagement with a panel securing stop member.]

B1 4,016,031 (203rd)

MANUFACTURE OF COMPOSITE MATERIALS

Greville E. G. Bagg, Waltham Abbey; John Cook, Chesbunt; Leslie E. Dingle, London; Henry Edwards, Harlow, and Hans Ziebland, Hertford, all of England, assignors to National Research Development Corporation, London, England

Reexamination Request No. 90/000,128, Dec. 21, 1981.
Reexamination Certificate for Patent No. 4,016,031, issued Apr. 5, 1977, Ser. No. 538,708, Jan. 6, 1975.
Continuation-in-part of Ser. No. 283,665, Aug. 25, 1972, abandoned.
Claims priority, application United Kingdom, Sep. 1, 1971, 40699/71
Int. Cl.³ D21F *11/06*
U.S. Cl. 162—213



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–15, having been finally determined to be unpatentable, are cancelled.

[1. A process for the manufacture of composite materials comprising a matrix containing aligned reinforcing fibres including the steps of dispersing the fibres in a liquid dispersion medium, passing the dispersion through a slit shaped aligning nozzle or a tapered nozzle so that the fibres are at least partially aligned and depositing the dispersion containing the aligned fibres upon a permeable surface capable of retaining substantially all the fibres and moving relative to the nozzle at a speed greater than the speed with which the fibres are travelling immediately before deposition and with an angular velocity sufficient to pass the dispersion medium rapidly through the permeable surface by centrifugal acceleration to leave a substantially dry fibre felt and thereby maintaining the alignment of the aligned fibres on the permeable surface such that at least 50% of the fibres are within 10° of the desired alignment direction.]

B1 4,066,086 (204th)

PROGRAMMABLE BODY STIMULATOR

Clifton A. Alferness, Woodinville, Wash., and John M. Adams, Anoka, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Reexamination Request No. 90/000,402, Jun. 13, 1983.
Reexamination Certificate for Patent No. 4,066,086, issued Jan. 3, 1978, Ser. No. 722,626, Sep. 13, 1976.
Continuation of Ser. No. 584,131, Jun. 5, 1973, abandoned.
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **10** and **23** are determined to be patentable as amended:

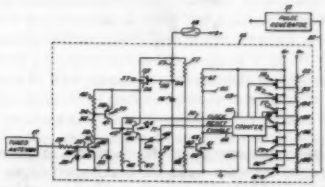
Claims **2–9**, **11–22**, and **24–29**, dependent on amended claims, are determined to be patentable.

New claims 30–31 are added and determined to be patentable.

1. In a body-implantable device for providing electrical stimulation *pulses* to living animal tissue of the type having pulse generator means with at least one alterable output parameter, output means adapted for connection to said tissue, and *programming* means responsive to *first* externally generated signals for programming said alterable output parameter in predetermined correspondence with *the parameter programming content of* said *first* signals, *in such a manner that upon cessation of said first signals, the output parameter will remain at the value to which it has been altered, until reprogrammed*[, the improvement wherein said programming means comprises:]:

receiving means for detecting *said* first externally generated signals of predetermined characteristics;

parameter altering means responsive to *said* detected first signals for altering said alterable output parameter in



predetermined correspondence with *said parameter programming content of* said first signals *which after said altering operates with said altered parameter until said parameter is reprogrammed to another value; the improvement comprising:*[:]

detection means for detecting second externally generated *magnetic field* signals *which is actuated upon said detection of said second signals, said second signals being* of predetermined characteristics *which are* discriminable from the characteristics of said first signals *by said detection means, so that said detection means is not actuated by said first signals, and by said receiving means so that said receiving means will not detect parameter programming content in said second signals*; and,

means responsive to *the actuation of said detection means by said* detected second signals for *energizing said receiving means and* enabling said output parameter altering means *to be responsive to said first signals* only during the occurrence of said second signals.

B1 4,153,469 (205th)

MONOCRYSTALS BASED ON STABILIZED ZIRCONIUM OR HAFNIUM DIOXIDE AND METHOD OF PRODUCTION THEREOF

Vladimir I. Alexandrov; Vyacheslav V. Osiko; Vladimir M. Tatarintsev, and Viktor T. Udovenchik, all of Moscow, U.S.S.R., assignors to Vsesojuznoje Objedinenije "Licensintorg", Moscow, U.S.S.R.

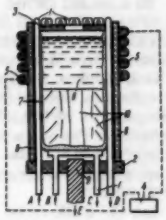
Reexamination Request No. 90/000,271, Oct. 8, 1982.
Reexamination Certificate for Patent No. 4,153,469, issued May 8, 1979, Ser. No. 873,063, Jan. 27, 1978.
Continuation of Ser. No. 782,445, Mar. 29, 1977, abandoned, which is a continuation of Ser. No. 391,055, Dec. 27, 1972, abandoned.
Int. Cl.[3] **C04B** *35/48;* **B01J** *17/00;* **C01F** *17/00;* **C01G** *27/02*
U.S. Cl. 501—86

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–12 are now disclaimed and dedicated.

[1. Transparent, cubic monocrystals consisting essentially of a metal dioxide selected from the group consisting of zirconium and hafnium, stabilized with yttrium oxide, with the following composition of said components (in mol. %):

metal oxide: 70–90
yttrium oxide: 30–10;



with said monocrystals exhibiting the following characteristics:

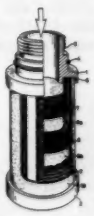
a refractive index of n=from 2 to 2.2, and
a pass band from 2,000 to 74,000 Å;
a microhardness of from 1,300 to 1,500 kg/mm^2;
a dislocation density of from 10^3 to 10^5 cm^{-2}; and
dimensions of from 1.0 to 8.0 cm in length, and from 0.5 to 4.0 cm in cross-section.]

B1 4,157,968 (206th)

FILTERS

Dirk G. Kronsbein, Düsseldorf, Fed. Rep. of Germany, assignor to Ultrafilter GmbH, Düsseldorf, Fed. Rep. of Germany

Reexamination Request No. 90/000,175, Mar. 12, 1982.
Reexamination Certificate for Patent No. 4,157,968, issued Jun. 12, 1979, Ser. No. 874,528, Feb. 2, 1978.
Filed Mar. 12, 1982, Ser. No. 874,528
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706017
Int. Cl.[3] **B01D** *25/04, 25/16*
U.S. Cl. 210—489



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–4 is confirmed.

1. A filter element for filtering air, other gases and liquids, comprising a filter medium, a first outlet side and a second inlet side permeable supporting shell, means supporting said second supporting shell inside and in spaced relation from said first supporting shell and supporting said filter medium in the space between said first and second supporting shells, said filter medium having a plurality of layers of different filter gauge comprising an inlet side filter layer adjacent said second supporting shell, an outlet side filter layer adjacent said first supporting shell and an intermediate filter layer located between

said inlet side and outlet side filter layers, said intermediate filter layer consists of binder-free glass microfibre fleece of substantially 0.2μ and said inlet side and outlet side filter layers consist of binder-free supporting nylon fibre fleece greater than 0.2μ.

B1 4,160,892 (207th)

METHOD AND APPARATUS FOR SEAM WELDING OVERLAPPED EDGES

Paul Opprecht, im hinteren Bernold, Bergdietikon, Switzerland 8962, and Martin Kaul, Bellikon, Switzerland, assignors to Paul Opprecht, Bergdietikon, Switzerland

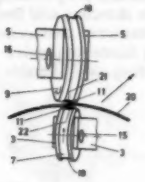
Reexamination Request No. 90/000,358, Apr. 11, 1983.
Reexamination Certificate for Patent No. 4,160,892, issued Jul. 10, 1979, Ser. No. 668,312, Mar. 18, 1976.
Claims priority, application Switzerland, Mar. 19, 1975, 3483/75; Jul. 21, 1975, 9488/75
Int. Cl.³ B23K *11/06*
U.S. Cl. 219—83

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 7, 14, 16 and 17** are determined to be patentable as amended:

Claims **2–6, 8–13, 15 and 18**, dependent on amended claims, are determined to be patentable.

1. A method for longitudinally seam welding overlapping metal sheet edges which comprises feeding two sheet edges of similar thickness to a welding station having opposed rollers on opposite sides of said overlapped sheets, guiding said edges along rigid guide means and biasing said edges toward said rigid guide means by resilient means, other than the metal sheet, which engages said sheet to cause said sheet edges to be in accurate overlapping relationship at said welding station, said [overlapped] *overlap* being no more than 6 times the thickness of the edges, continuously feeding a pair of flat wire electrodes to the welding station between the rollers at the same rate as the overlapped edges and passing the overlapped edges in a longitudinal direction between said pair of electrodes so that the electrodes are located on opposite sides of the overlapped seam, said electrodes having a width of from 2 to 3 times that of the overlap, compressing the overlapped edges together between said electrodes at the welding station



and simultaneously energizing the electrodes to thereby longitudinally *compress*-seam weld the overlapped edges whereby the edges are welded with a continuously renewable electrode surface and the seam extends beyond the overlapped region into adjacent portions of the non-overlapped regions of the sheet edges, whereby the outer sheet edges are welded to the adjacent sheet to prevent each outer sheet edge from bending away from the adjacent sheet.

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 5, 1984

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

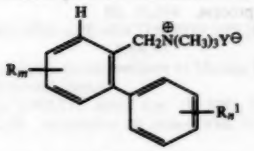
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T104,301
PROCESS FOR PRODUCING PYRETHROID INTERMEDIATES

Raymond M. Palmere, 17 Morris Rd., West Orange, N.J. 07052

Filed Oct. 13, 1983, Ser. No. 541,403
Int. Cl.³ C07C *87/28*
U.S. Cl. 564—337
No Drawing. 12 Pages Specification

Disclosed is a process for the preparation of an optionally substituted N,N-2-trimethyl-[1,1'-biphenyl]-3-methanamine, Compound II, by rearrangement of a N,N,N-trimethyl-]1,1'-biphenyl]-2-methanaminium compound, Compound I. Compound I is treated with at least one equivalent of sodium or lithium methylsulfinyl carbanion in the presence of dimethylsulfoxide at a temperature in the range of 0° to 70° C. to give Compound II. The process is conveniently conducted by adding lithium hydride or sodium hydride to excess dimethylsulfoxide to produce a solution of the lithium or sodium methylsulfinyl carbanion, then adding Compound I to the solution thus formed. Compound II is a useful intermediate for the preparation of insecticidal pyrethroid esters of formula IV. Compound II may be converted into ester IV by treatment with ethyl chloroformate or cyanogen bromide to give intermediate III, followed by reaction with an alkali metal or ammonium salt of the desired pyrethroid acid. In the following formulas, R and R^1 are independently halogen, alkyl, fluoromethyl, alkoxy, or fluoroalkoxy, m is 0 to 3, n is 0 to 5, Y is a chloride, bromide, iodide, or hydroxide ion, X is chlorine or bromine, and R^2CO_2 is a pyrethroid acid moiety.



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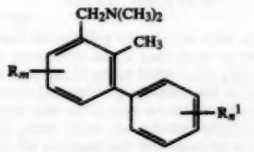
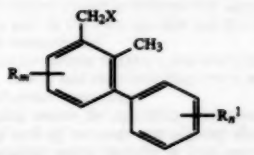
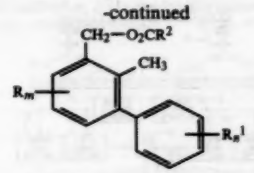


II



III

-continued

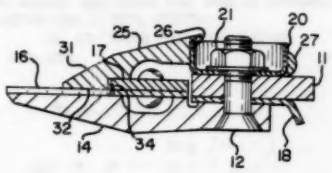


IV

T104,302
CUTTING APPARATUS AND ADJUSTABLE HOLD DOWN THEREFOR

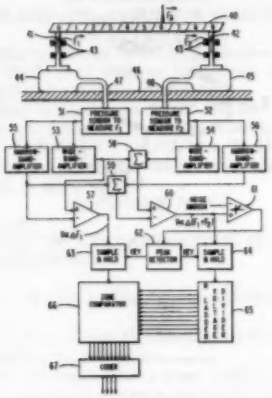
Orlin W. Johnson, 578 30th Ave.; Richard E. Benson, 397 33rd Ct., both of East Moline, Ill. 61244, and Dathan R. Kerber, 2347 Hawthorne Ct., Bettendorf, Iowa 52722

Continuation of Ser. No. 244,355, Mar. 16, 1981. This application Jul. 26, 1982, Ser. No. 402,187
Int. Cl.³ A01D *55/06, 55/08*
U.S. Cl. 56—305
1 Sheets Drawing. 9 Pages Specification



A crop cutting apparatus having an elongated cutterbar, a plurality of guards, and reciprocating knife disposed in the usual arrangement wherein cylindrical cup-like retainer members are mounted by the guard mounting bolts to the top side of the cutterbar. A hold down clip slips over the retainer members and has a rearward portion contacting the cutterbar, a medial portion displaced from the cutterbar, and a forward portion including a horizontal surface acting against the knife and a vertical surface acting against the front side of the knife back. A single tie down bolt disposed between the retainer cups adjustably hold the clip in position to resist upward movements of the knife assembly.

T104,303
MECHANICALLY ACTUATED GENERAL INPUT CONTROLS
Charles M. Wine, 144 Hamilton Ave., Princeton, N.J. 08540
Filed Aug. 23, 1982, Ser. No. 410,857
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—551
12 Sheets Drawing. 47 Pages Specification

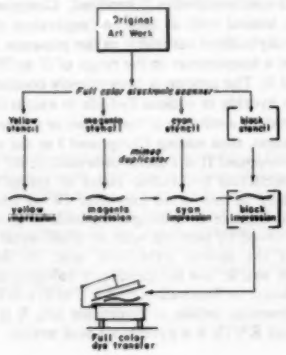


Changes in the support forces on a structural member when it is touched are used to compute the location of the point at which the structural member is touched.

T104,304
METHOD OF BENEFICIATING HIGH CARBONATE PHOSPHATE ORE
Shuang-shii Hsieh, 1622 Bridlewood Dr., and James R. Lehr, 124 Riverview Dr., both of Florence, Ala. 35630
Filed Aug. 22, 1983, Ser. No. 525,073
Int. Cl.³ B03D *1/14*
U.S. Cl. 209—166
No Drawing. 15 Pages Specification

A phosphate ore flotation process subjecting a phosphate ore containing carbonate mineral impurities to froth flotation in the presence of modifying agents, said modifying agents being alkyl phosphonic acids and hydrofluoric acid, and a collector, said collector being fatty acids; collecting the phosphate and carbonate minerals as rougher concentrate from the overflow; subjecting the phosphate and carbonate mineral concentrate to a differential desorption with an acid to remove the fatty acid from the surface of the phosphate mineral; removing the separated carbonate minerals from the overflow; and recovering the phosphate values in the underflow.

T104,305
METHOD OF MAKING FULL COLOR DRY TRANSFERS
John Sattelmaier, 2824 Skipton Rd., Richmond, Va. 23225
Continuation of Ser. No. 272,974, Jun. 12, 1981. This application Aug. 18, 1983, Ser. No. 524,222
Int. Cl.³ B41F *15/04*; B41M *5/26*
U.S. Cl. 101—115
1 Sheets Drawing. 16 Pages Specification



Full color dry transfers are prepared economically and in a semiautomated manner using a mimeograph duplicator in which a full color original is used to prepare one each of yellow, magenta and cyan stencils in an electronic facsimile scanning device, then each stencil together with the correspondingly colored mimeograph ink is used in a mimeograph duplicator to produce in seriatum a full color dry transfer according to the disclosed process.

REISSUES

JUNE 5, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,593

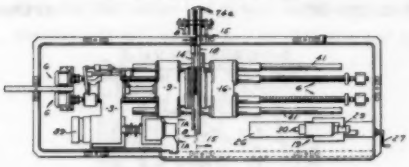
UNIVERSAL CRANKSHAFT FINISHING MACHINE

Edward E. Judge, Jr., Lansing, Mich., assignor to Industrial Metal Products Corp., Lansing, Mich.

Original No. 4,290,238, dated Sep. 22, 1981, Ser. No. 104,784, Dec. 18, 1979. Application for reissue Jan. 13, 1983, Ser. No. 438,901

Int. Cl.³ B24B *5/42*

U.S. Cl. 51—58 **27 Claims**



18. A machine for performing finishing operations such as polishing, burnishing or fillet rolling on individual rotatable workpiece shafts, each having a plurality of longitudinally spaced individual eccentric circumferential surfaces, comprising, shaft rotating means, means engageable with an individual eccentric circumferential surface during shaft rotation for finishing said surface, means mounting said finishing means for synchronized movement with said individual eccentric surfaces, electronically variable programmable means for precisely locating successive positions of a plurality of said surfaces, means for dimensionally preprogramming said programmable means to selectively identify a plurality of said surfaces to be finished on a given shaft, and accurately controllable power means responsive to said preprogrammed programmable means to withdraw said finishing means from said individual eccentric surface and to move said finishing means longitudinally successively to each of said selectively identified surfaces and thereupon to engage and finish said surface.

Re. 31,594

METHOD AND APPARATUS FOR SPLICING SPUN YARNS

Hirosi Mima, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyotoshi, Japan

Original No. 4,263,775, dated Apr. 28, 1981, Ser. No. 79,489, Sep. 27, 1979. Application for reissue Feb. 16, 1982, Ser. No. 349,075

Int. Cl.³ D01H *15/00*

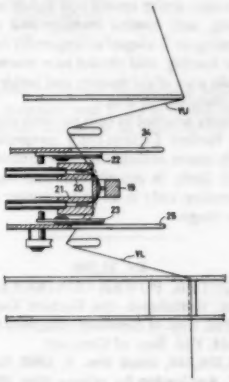
U.S. Cl. 57—22 **29 Claims**

1. A method for splicing spun yarns in an automatic winder by inserting yarn ends into a yarn splicing nozzle and being subjected to an air jet to splice them in the yarn splicing nozzle, characterized in that splicing is performed by subjecting a yarn on the package side and a yarn on the bobbin side to an action of air stream jetted from the splicing nozzle, while both the yarn ends on the package and bobbin sides are kept free under an action of suction stream in independent yarn control nozzles for the yarn end on the package side and the yarn end on the bobbin side, respectively.

10. A device for splicing together a first end of yarn and a second end of yarn, each of said ends including several entangled strands of fiber, said device comprising:

disentangling means for separating said entangled strands of fiber of each of the ends and aligning them, wherein said disentangling means includes at least one vacuum control nozzle having an opening into which said yarn ends are directed, said nozzle creating a suction force which disentangles and aligns said entangled strands of fiber;

positioning means for aligning said first and second yarn ends adjacent each other, in an overlapping manner, and facing in essentially opposite directions;



compressed fluid splicing means for entangling the separated strands of fiber from said first yarn end with the separated strands of fiber from said second yarn end to thereby splice said first and second yarn ends together.

Re. 31,595

ELECTRIC POWER CONTROLLERS

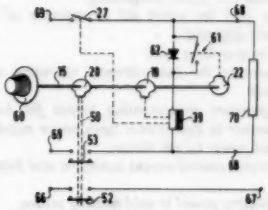
Karl Fischer, Oberderdingen; Robert Kicherer, Knittlingen, and Gerhard Goessler, Oberdingen, all of Fed. Rep. of Germany, assignors to E.G.O. Regeltechnik GmbH, Fed. Rep. of Germany

Original No. 4,206,344, dated Jun. 3, 1980, Ser. No. 802,896, Jun. 2, 1977. Application for reissue May 28, 1982, Ser. No. 383,199

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625715; Jun. 9, 1976, 2625716

Int. Cl.³ H05B *1/02*; H01H *61/02*

U.S. Cl. 219—507 **4 Claims**



14. [A controller according to claim 1, which is] *A power controller for the controllable supply of electrical power intermittently to a load, comprising:*

a housing;

a snap switch having a snap switch carrier on which a snap spring, bearing a switching contact, is mounted, said snaps

with carrier being pivotably mounted on a fulcrum point in said housing;

an L-shaped bimetal member pivotally mounted in said housing and having a lever by which it acts on said snap switch, said lever extending at an angle to said bimetal member and substantially parallel to said snap switch carrier;

means for heating said bimetal member in dependence upon the power supplied to said load via said snap switch;

a compensation bimetal strip secured to said snap switch carrier at the fulcrum point side thereof and extending substantially parallel thereto;

control cam means acting upon a free end of said compensation bimetal strip, said bimetal member and said snap switch carrier forming an L-shaped arrangement running along two sides of the housing, said control cam means being arranged in the middle area of the housing and inside the angle of said L-shaped arrangement; and,

said controller being adapted to operate with alternating current and [which] further [comprises] *comprising* a diode and auxiliary switch means actuable by said control cam means for connecting said diode in circuit with said heating means for said bimetal member, only in an upper power range but not in a lower power range.

Re. 31,596

ELECTRIC POWER CONTROLLERS

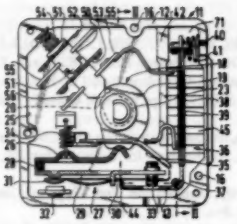
Robert Kicherer, Knittlingen, and Gerhard Goessler, Oberdingen, both of Fed. Rep. of Germany, assignors to E.G.O. Regeltechnik GmbH, Fed. Rep. of Germany

Original No. 4,206,344, dated Jun. 3, 1980, Ser. No. 802,596, Jun. 2, 1977. Application for reissue May 28, 1982, Ser. No. 383,200

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2625715; Jun. 9, 1976, 2625716

Int. Cl.³ H05B *1/02;* **H01H** *61/02*

U.S. Cl. 219—507 **4 Claims**



21. *A power controller for the substantially stepless manual control of electrical a.c. power comprising:*

a housing in, and on which all components of the power controller are disposed;

power switch means for a load;

a bimetal member for intermittently operating said power switch means;

ambient temperature compensating means for heating said bimetal member in dependence upon power supplied to said load via said power switch means;

manually operable control means acting on said bimetal member;

a diode for limiting power to said heating means;

auxiliary switch means, actuable by said control means, for enabling manual switching of said diode in circuit with said heating means only in an upper power range, said heating means receiving only half wave power in an upper range but receiving full wave power in a lower power range;

a cam forming part of said manually operable control means and including a sloped operating surface which compensates for a control discontinuity due to said switching of said diode when manually adjusting the control means between the upper and lower power ranges, whereby substantially stepless control is achieved despite the intermittent switching of the power.

Re. 31,597

ELECTRIC POWER CONTROLLERS

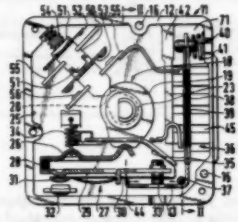
Karl Fischer, Oberderdingen; Robert Kicherer, Knittlingen, and Gerhard Goessler, Oberdingen, all of Fed. Rep. of Germany, assignors to E.G.O. Regeltechnik GmbH, Fed. Rep. of Germany

Original No. 4,206,344, dated Jun. 3, 1980, Ser. No. 802,596, Jun. 2, 1977. Application for reissue May 28, 1982, Ser. No. 383,270

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1976, 2525715; Jun. 9, 1976, 2625716

Int. Cl.³ H05B *1/02;* **H01H** *61/02*

U.S. Cl. 219—507 **16 Claims**



1. A power controller for the controllable supply of electrical power intermittently to a load, comprising:

a housing;

a snap switch having a snap switch carrier on which a snap spring, bearing a switching contact, is mounted, said snap switch carrier being pivotably mounted on a fulcrum point in said housing;

an L-shaped bimetal member pivotally mounted in said housing and having a lever by which it acts on said snap switch, said lever extending at an angle to said bimetal member and substantially parallel to said snap switch carrier;

means for heating said bimetal member in dependence upon the power supplied to said load via said snap switch;

a compensation bimetal strip secured to said snap switch carrier at the fulcrum point side thereof and extending substantially parallel thereto; and,

control cam means acting upon a free end of said compensation bimetal strip, said bimetal member and said snap switch carrier forming an L-shaped arrangement running along two sides of the housing, said control cam means being arranged in the middle area of the housing and inside the angle of said L-shaped arrangement.

Re. 31,598

APERTURE FORMING DEVICE

John R. McCluskey, Unique Techniques, Inc., P.O. Box 68, Hannacroix, N.Y. 12087

Original No. 4,157,807, dated Jun. 12, 1979, Ser. No. 689,954, May 25, 1976. Continuation of Ser. No. 580,871, May 27, 1975, abandoned, which is a continuation of Ser. No. 423,151, Dec. 10, 1973, abandoned. Application for reissue Dec. 29, 1980, Ser. No. 221,033

Int. Cl.³ B28B *7/28*

U.S. Cl. 249—177 **9 Claims**

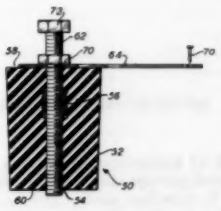
4. Aperture forming means of the type intended to be disposed within a hardenable plastic material while said material is in a substantially fluid state and, upon said material becoming substantially rigid, said material being of the type disposed upon or in a form, said forming means being removable from said material to

thereby form therewithin said aperture, said aperture forming means comprising:

(a) an elastomeric body portion having top and bottom portions, the top portion being intended to be disposed adjacent to and accessible through the exposed surface of the plastic material wherein said body portion is a substantially geometric solid, in which the end defining said top portion is at least as large as or larger than said bottom portion;

(b) a substantially rigid member secured within and engaging said body portion and spaced from said top portion;

(c) means for grasping said rigid member; said grasping means extending from within and without said body portion for engaging said rigid member and for deforming said body portion so as to remove said body portion and said rigid member from the hardened plastic material; and



(d) locating means to thereby located said body portion within said plastic material; said locating means receiving therein said body portion and being securable to the form.

PLANT PATENTS

GRANTED JUNE 5, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,240

CHRYSANTHEMUM PLANT NAMED ASPEN

Walter H. Jessel, Jr., Fremont, and William E. Duffett, Salinas, both of Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 21, 1982, Ser. No. 420,902
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct plant of *Chrysanthemum morifolium,* Ramat., known by the cultivar name of Aspen, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of incurved capitulum form; standard capitulum type; white ray floret color; diameter across face of capitulum ranging from 125 to 140 mm. at maturity; uniform nine (9) week flowering response; medium plant height when grown single stem with no long days and a low temperature tolerance of 13° C. (55°F.) for initiation and development under controlled short days with a continuous dark period of 13 to 15 hours.

5,241

NECTARINE TREE NAMED 'AMA LIN'

Vartan T. Apkarian, 8031 S. Crawford, Reedley, Calif. 93654, assignor to Vartan T. Apkarian; Donald K. Ninkovich and Betty Apkarian, all of Reedley, Calif.

Filed Dec. 15, 1982, Ser. No. 450,113
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by its bearing of semi-freestone, yellow fleshed, even ripening fruit having a full and dark red skin coloration, being uniformly of large size for its early ripening period, and being uniformly of substantially spherical form and being particularly characterized by bearing such fruit about eight days earlier than an ungirdled tree of the May Grand variety (U.S. Plant Pat. No. 2,794) bears fruit.

5,242

CHRYSANTHEMUM PLANT NAMED FORTUNE

William E. Duffett, Salinas, Calif., and Grace H. Mack, New Canaan, Conn., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sep. 16, 1982, Ser. No. 419,005
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the name Fortune and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, decorative capitulum type, light golden yellow ray floret color, diameter across face of capitulum up to 70 mm., short plant height, spreading branching pattern, average natural season flowering date of September 12, and average flowering response period of seven (7) weeks in photoperiodic controlled short day programs.

PLANT PATENTS

GRANTED JUNE 3, 1941

Reproduced from Official Gazette of the United States Patent Office

PATENTS

GRANTED JUN. 5, 1984

ERRATA

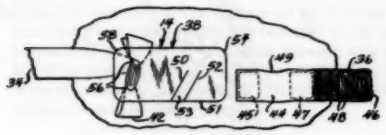
For CLASS	See PATENT NO.
446–045	4,452,007
229–033	4,452,367
239–463	4,452,578
260–429	4,452,724
429–104	4,452,777
427–054	4,452,819
424–246	4,452,851
524–541	4,452,946
548–466	4,453,001
524–458	4,453,261
455–129	4,453,269

PATENTS

GRANTED JUNE 5, 1984

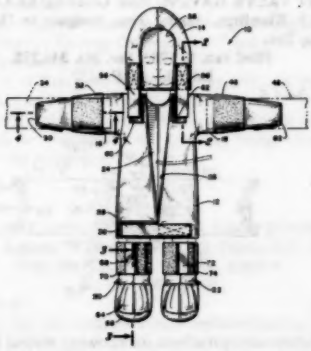
GENERAL AND MECHANICAL

4,451,931
DISPOSABLE GARMENT WITH CARD TONGUE
Cynthia A. Wichman, St. Charles, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Sep. 23, 1982, Ser. No. 422,229
Int. Cl.³ A41B *13/10*
U.S. Cl. 2—51 **10 Claims**



1. A disposable garment, comprising:
a gown having a pair of sleeves, a front, and a pair of side margins defining an open back for the gown;
a first belt having one end secured to the gown and the other end being free;
a second belt having one end secured to the gown; and
a transfer card having a lower side edge, and a pair of generally aligned slits extending from said side edge and defining a tongue, and means for releasably attaching the other end of the first belt to the card, with the card tongue being received behind the second belt to hold the card in place on the gown.

4,451,932
INFANT RESTRAINT
Dolores M. Wagemann, 24663 E. 6th St., and Connie S. Myers, 7380 Guthrie St., both of San Bernardino, Calif. 92410
Filed Dec. 3, 1982, Ser. No. 446,465
Int. Cl.³ A61F *13/00*
U.S. Cl. 2—80 **7 Claims**



1. In combination with an infant, said infant having a torso from which extends a head, legs and arms, with a foot connected to each leg, a restraint assembly for substantially immobilizing said infant, said restraint assembly comprising:
a vest to be located about said torso, said vest including an opening assembly for permitting ease of accessability to the torso, a disengageable first fastener assembly attached to said vest directly adjacent said opening assembly, said first fastener assembly to be operable to connect together said vest about said opening assembly;
a pair of sleeves attached to said vest and extending therefrom, a said arm to extend through a said sleeve, a first pair of securing straps removably connected by a second fastener assembly to said sleeve; and
a bootie for each said foot, a second pair of securing straps removably connected by a third fastening assembly to said booties, whereby both said first pair and said second pair of securing straps are to be connected to a separate structure thereby restraining said infant.

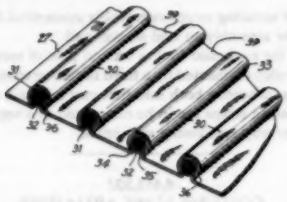
4,451,933
COSTUME MASK ARMATURE
Mary L. Seng, 2345 Liberty St., Allentown, Pa. 18104; Judith A. Wanfried, 218 N. Jefferson St., Allentown, Pa. 18102, and Robert H. Beisel, 173 W. 78th St., Apt. 15D, New York, N.Y. 10024
Filed Jan. 28, 1982, Ser. No. 343,429
Int. Cl.³ A42B *1/04*
U.S. Cl. 2—202 **10 Claims**

1. A universal costume mask armature for the human head comprising a rigid, generally continuous infrastructure of a size to overfit and substantially envelope a human head, said structure including a skull-shaped cranium and a face portion continuous therewith, said face portion including:
(a) a pair of eye ports positioned thereon to allow a wearer to perceive visually therethrough;
(b) a nose plate located between said eye ports and adapted to receive and support a mask nose feature;
(c) a maxilary plate located below said nose plate and spanning the width of said face below said eye ports to aid in supporting said mask nose and also mask upper lip features; and,
(d) a chin plate forming part of said infrastructure and located immediately below, discontinuous, and spaced apart from said maxilary plate and projecting outwardly therefrom, said chin plate adapted to receive and support mask lower lip/jowl features.

4,451,934
RIBBED VENTILATING UNDERGARMENT FOR PROTECTIVE GARMENTS
Debbie A. Gioello, 237 Van Cortlandt Park Ave., Yonkers, N.Y. 10705
Filed Oct. 16, 1981, Ser. No. 312,173
Int. Cl.³ A41B *9/06*
U.S. Cl. 2—113 **9 Claims**

1. An improved undergarment for use in conjunction with the wearing of a relatively moisture impervious outergarment comprising at least one body covering panel; said panel being formed of a porous textile material having a substantial ability to absorb moisture, said panel having a plurality of raised generally parallel ribs extending from at least one surface thereof and forming channels therebetween for the conduction of moisture vapor therealong when said undergarment is worn by a user beneath said outergarment; said innergarment having

free edges thereof which are disposed at substantial angles with respect to the principal axes of at least some of said ribs,



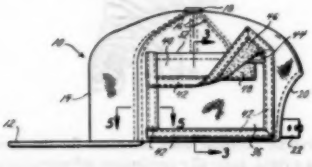
whereby at least some of said channels are positioned during the wearing of the undergarment to communicate with the ambient atmosphere.

4,451,935

HEAD COVERING EQUIPPED WITH DOUBLE POCKET

Edward W. Henschel, 13966 Meursalt Dr., Chesterfield, Mo. 63017

Filed May 10, 1982, Ser. No. 376,594
Int. Cl.³ A42C 5/00
U.S. Cl. 2—185 R 12 Claims



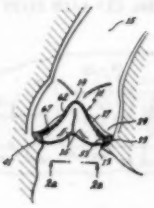
1. A head covering which is equipped with a double pocket and which comprises a head-covering section, a wall that is disposed in register with a portion of said head-covering section and that coacts with said portion of said head-covering section to help define an inner pocket, a second wall that is disposed in register with the first said wall and that coacts with said first said wall to help define an outer pocket, said first said wall having the bottom and sides thereof immediately adjacent the bottom and sides of said portion of said head-covering section to complete said inner pocket, said second wall having the bottom and sides thereof immediately adjacent the bottom and sides of said first said wall to complete said outer pocket, said portion of said head-covering section having a curved configuration in plan view, said first said wall being taller than said second wall to provide a flap-forming portion at the free edge of said first said wall which can be moved upwardly to a position wherein it effectively blocks the entrance to said inner pocket or which can be moved downwardly to a second position wherein it effectively blocks the entrance to said outer pocket, and a fold in said first said wall which is adjacent the level of the upper edge of said second wall and which helps define said flap-forming portion of said first said wall and which enables said flap-forming portion to be moved outwardly over and downwardly below the level of said upper edge of said second wall to said second position, said flap-forming portion having both side edges thereof free to move toward and away from said first wall and also toward and away from said portion of said head-covering section and said fold having a curved configuration in plan view which is generally complementary to said curved configuration of said portion of said head-covering section, whereby said fold tends to hold said flap-forming portion of said first said wall adjacent the outer face of said second wall as long as said fold is permitted to remain in said first said wall.

4,451,936

SUPRA-ANNULAR AORTIC VALVE

Alain Carpentier, Paris, France, and Ernest Lane, Huntington Beach, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 21, 1981, Ser. No. 332,544
Int. Cl.³ A61F 1/22
U.S. Cl. 3—1.5 10 Claims



1. An aortic prosthetic valve for supra-annular implantation comprising:

a valve body of generally annular configuration and a valve element movably mounted on the valve body for opening and closing the valve, said valve body terminating in a generally annular base surface;

a scalloped suture ring circumscribing said valve body adjacent said base surface and configured to approximately fit the contour of the Sinuses of Valsalva at the base of the aorta; and

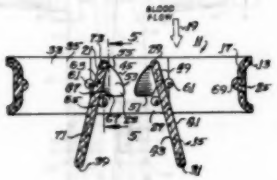
said base surface of said valve body being of a wavy configuration and configured such that it does not project into the annulus at the base of the aorta when the suture ring is in place in the Sinuses of Valsalva whereby the aortic prosthetic valve can be mounted in a supra-annular position and the valve body does not interfere with flow through the annulus.

4,451,937

HEART VALVE HAVING EAR GUIDED OCCLUDERS

Jerome J. Klawitter, Austin, Tex., assignor to Hemex, Inc., Austin, Tex.

Filed Feb. 8, 1982, Ser. No. 346,722
Int. Cl.³ A61F 1/22
U.S. Cl. 3—1.5 24 Claims



1. A heart valve prosthesis for allowing normal blood flow therethrough from upstream to downstream including:

a generally annular valve body having an interior wall which defines a central passageway for blood flow therethrough,

occluder means for blocking the reverse flow of blood through said passageway,

ears extending from opposite locations on the periphery of said occluder means,

complementary depressions formed in said interior wall of said valve body which are proportioned to receive said ears and to guide said ears along a curving path as said occluder means moves between closed and open positions,

stop means in said annular valve body against which the

upstream face of said occluder means abuts in the closed position,

first and second bump means protruding from said interior wall and being associated with each of said depressions, said first bump means being located downstream of said occluder means and said second bump means being located upstream of said occluder means in said closed position, said first bump means being in contact with the downstream face of said occluder means during moving to said open position and determining the orientation of said occluder means in the fully open position, and

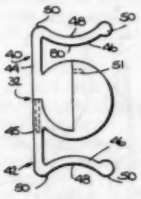
the shape of said depressions being such to, in cooperation with said bump means, guide said occluder means in both pivotal and translational movement between said closed and open positions, whereby said downstream face of said occluder means slides against said first bump means during opening of said occluder means.

4,451,938

INTRAOCULAR LENS AND METHOD OF POSITIONING THE SAME IN AN EYE

Charles D. Kelman, Floral Park, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,374
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 **23 Claims**



1. An intraocular lens comprising:

a lens body having a plurality of portion which are separable outside an eye;

a plurality of position-fixation members extending from said lens body for fixating the position of said lens body portions within the eye;

a plurality of lens portions comprising said lens body portions and said position-fixation members,

said plurality of lens portions being individually insertable through an opening in the eye and being connectable within the eye to form the lens.

4,451,939

KNEE JOINT APPARATUS FOR A LEG PROSTHESIS

Thompson, Johnnie W., Rte. 3, Box 263, Pelzer, S.C. 29669

Filed Jan. 21, 1981, Ser. No. 226,813
Int. Cl.³ A61F 1/04
U.S. Cl. 3—23 **2 Claims**

1. Knee-joint apparatus for a leg prosthesis having an upper leg section above and a lower leg section below the knee joint, said apparatus comprising:

a connecting member connected to one of said upper or lower leg sections;

a housing member connected to the other of said upper and lower leg sections;

a shaft rotatably connecting said connecting and housing members;

a roller bearing clutch assembly rotatably connecting said housing member to said shaft including:

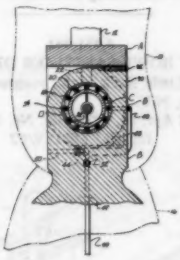
an outer bearing race connected to said housing member including a plurality of circumferentially spaced tapered camming portions having a generally wedge-shaped camming surface;

a plurality of roller bearings position in said camming portions bearing against said shaft;

said roller bearings having a first position in said camming portion in which said bearings are locked between a surface of the camming portion and said shaft for locking and preventing rotation relative to said shaft in a first direction;

said roller bearings having a second position in said camming portion in which said bearings are freed between said camming portion surface and said shaft permitting rotation between said shaft and housing member;

a clutch operator means carried concentric with said shaft operatively connected with said roller bearings for shifting said position of said roller bearings in said camming portions, said operator means having an unlocked position in which said clutch assembly in disengaged and said roller bearings are held in said second position to permit rotation in said first direction;



said clutch operator means having a locked position in which roller bearings are maintained in said first position thereof and prevent said rotation in said first direction;

said clutch operator means including a first operator ring carried on one end of said bearing race and a second operator ring carried on an opposing end of said bearing race, said first and second operator rings being carried about said shaft concentric with said bearing race, and said roller bearings having opposing ends fixed in said operator rings and wherein said operation rings including a mechanical connection to actively engage an actuator member in response to pressure on a portion of said foot prosthesis for positioning said bearings in said first and second positions; and

said actuator member including a rigid mechanical linkage assembly connected between said foot prosthesis having a pair of prongs, one each of said prongs engaging said first and second operator rings to positively position said rings and roller bearings held thereby.

4,451,940

TOILET SEAT AND COVER ASSEMBLY

James H. Grunz, 5080 Woodson Dr., Mission, Kans. 66202

Filed Sep. 30, 1982, Ser. No. 431,787
Int. Cl.³ A47K 13/00
U.S. Cl. 4—234 **8 Claims**

1. A toilet seat structure having a water tank, a bowl, a seat normally resting horizontally on the bowl, a cover normally horizontally resting on the seat and hinge means secured to the bowl in interconnecting relationship to the seat and the cover for swinging movement thereof separately or together toward an upstanding position adjacent the tank, releasable means for preventing the seat from swinging toward the bowl by gravitation when the seat and the cover are in said upstand position, said releasable means comprising:

at least one element for the seat and for the cover respectively,

said elements being characterized by having a magnetic force acting mutually therebetween tending to draw the

same together and resisting their separation when the elements are in relatively close proximity to each other; and

means attaching the elements to the seat and to the cover in position for bringing the elements into said relatively close proximity to each other when the seat and cover are swung to said upstanding position.

4,451,941

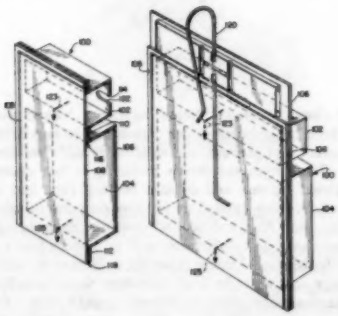
TOILET BOWL SANITIZER DISPENSER

James R. Gray, Little Rock, Ark., assignor to Sterling Drug, Inc., New York, N.Y.

Filed Apr. 18, 1983, Ser. No. 486,238

Int. Cl.³ E03D 9/02

U.S. Cl. 4—228 **53 Claims**



1. A dosing dispenser for immersion in a body of water whose level can be lowered from an upper level to a lower level, comprising:

(a) means for containing a solid, water soluble material;

(b) means, including first and second walls defining a first flow path therebetween, for providing a dose-volume of water from the body of water to said containing means, along said first flow path, in response the level of the body of water in which said dosing dispenser is immersed falling from the upper level to the lower level, said first wall being flexible and located so that hydrostatic pressure from the body of water presses said first wall against said second wall to close said first flow path against water flow therealong when the level of the body of water is above said first wall and permits said dose-volume of water to flow between said first and second walls into said containing means when the level of the body of water is below said first wall, water in said containing means dissolving a portion of said material therein to form a material containing solution; and

(c) means for dispensing a dose-volume of the solution from said containing means into the body of water when the body of water falls from the upper level to the lower level.

27. A dosing dispenser for immersion in a body of water capable of falling from an upper level to a lower level, comprising:

(a) a first chamber;

(b) a second chamber for containing a solid water soluble material, below said first chamber;

(c) means for trapping a dose-volume of water in said first chamber;

(d) a first normally closed valve means, including a valve located between said first and second chambers, said valve being openable in response to falling of the level of the body of water therepast, for providing the dose-volume of water from said first chamber into said second chamber, water in said second chamber dissolving a portion of the solid material therein to form a solution; and

(e) means, normally isolating the solid material from the body of water in which said dispenser is immersed, for providing a dose-volume of solution from said second chamber to the body of water in response to falling of the body of water from the upper level to the lower level.

4,451,942

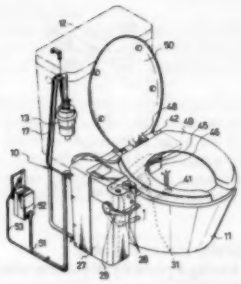
LOCAL WASHING DEVICE OF FLUSH TOILET

Yoshio Hirano; Noriyuki Tokunaga; Hidekazu Murabayashi, and Takumi Urayama, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 15, 1982, Ser. No. 418,457

Int. Cl.³ A47K 4/00, 3/02

U.S. Cl. 4—420.2 **6 Claims**



1. A local washing device of flush toilet comprising a flushing water reservoir supplying water to a toilet bowl, conduit means having an outlet and an inlet communicating with said water reservoir, a heated-water tank communicating with said outlet to receive water from the water reservoir and having means for heating the water supplied, a nozzle arm connected at one end to said heated-water tank and being rotatable so that the other, free end is movable between respective retracted and extended positions inside said bowl, a nozzle provided at said free end of said nozzle arm to be capable of opposing the user's body part to be washed when said nozzle arm is positioned in said extended position, said nozzle arm communicating said nozzle arm with said heated-water tank, an electromagnetic pump disposed in said reservoir and communicating with said inlet of said conduit means, and an electric circuit for supplying to said pump an initially small amount of exciting current for slowly starting a stream of water from said nozzle toward said user's body part at a low pressure, and a subsequently higher amount of exciting current for increasing the pressure of the water stream after an initial amount of water has been ejected at low pressure from said nozzle.

4,451,943

WETTING DEVICE FOR TOILET PAPER

Allen R. Nibler, R.R. 2, Box 280, Walla Walla, Wash. 99362

Filed Feb. 28, 1983, Ser. No. 470,136

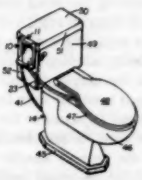
Int. Cl.³ A47K 17/00

U.S. Cl. 4—661 **4 Claims**

1. In a device to wet toilet paper prior to use, the combination, comprising:

a box-like body having an accessable opening wherein toilet paper to be wetted may be held, first means of dispersing water by gravity upon toilet paper maintained in said opening;

an associated water supply system communicating from a source of pressurized water through a normally closed manually operative dispersement valve to a secondary reservoir from whence water is dispersed to the first water disbursing means;



second means of manually operating the dispersement valve of the water supply system to pass a predetermined quantity of water; and

a water exhaust system, below the opening in the body, to receive water disbursed by the first water dispersing means and pass that water, by gravity, through a conduit to an associated water waste system.

4,451,944

NET BED

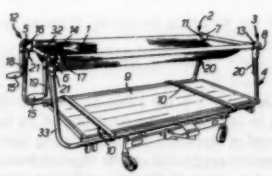
David R. James, Glenyard, England, assignor to James Industries Limited, Gloucester, England

Filed Jul. 10, 1981, Ser. No. 282,165

Claims priority, application United Kingdom, Jul. 11, 1980, 8022764

Int. Cl.³ A61G 7/10

U.S. Cl. 5—61 **8 Claims**



1. A bed of the type which supports a patient on a flexible web slung between two generally parallel shafts on to which the ends of the web are respectively wound, comprising:

a framework having two spaced support crutches at each end thereof; and

two shafts which include end fittings respectively providing bearings which demountably support the ends of each shaft in a corresponding two of said support crutches of said framework, one of said end fittings of each shaft comprising a plain bearing assembly having an annular bearing member which engages directly in the corresponding one of said support crutches and the other of said end fittings of each shaft comprising a combined bearing and drive clutch/brake unit with a non-circular housing which non-rotatably engages in the corresponding one of said support crutches, each end of said shaft being held captive with respect to the framework by means of a member such as a chain or cord of such length that when one end of a shaft is lifted out of the corresponding support crutch and lowered so as to hang freely on the corresponding chain or cord it is constrained to move inside of an arc such that the resultant universal angular movement of the other end of that shaft, which remains in the associated support crutch, lies within a permissible range at all times during thhe lowering movement, said bearing member, housing and support crutches being formed to provide said permissible range of free angular movement at each support crutch with such free movement at the corresponding end of each shaft being achieved by forming said plain bearing member thereof with adequate clearance relative to the corresponding support crutch.

4,451,945

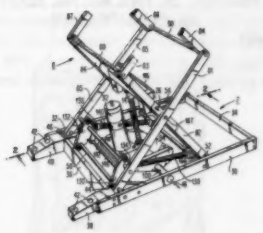
MEDICAL COUCH

Lothar Heinz, Neunkirchen, Fed. Rep. of Germany; George Menor, Martinez, and Hendrick Jahsman, Berkeley, both of Calif., assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Sep. 8, 1981, Ser. No. 299,882

Int. Cl.³ A61G 7/00

U.S. Cl. 5—63 **2 Claims**



1. A medical couch comprising in combination:

(a) a lower frame arranged in a first horizontal plane;

(b) an upper frame for carrying a table top, said upper frame being arranged in a second horizontal plane above said first horizontal plane;

(c) a pivotally interconnected scissor action link mechanism interconnecting said lower frame with said upper frame for moving said upper frame parallel to said lower frame between a lowered and a raised position, and vice versa, said link mechanism including at least a first and a second pair of pivotally interconnected support arms, said first pair of support arms being vertically arranged between one side of said lower frame and one side of said upper frame, and said second pair of support arms being vertically arranged between the opposite sides of said lower and upper frames, each of said first and second pairs of support arms including a circular opening in links of said support arms;

(d) an electric motor drive system containing an electric motor and a lead screw, said lead screw being rotatable by said motor and being longitudinally fixed with respect to said drive system;

(e) lower pivoting means for pivotally connecting said drive system to said lower frame and for pivoting said drive system about a stationary horizontal axis, said lead screw thereby extending towards said upper frame and pivoting in a plane which is parallel to said pivotal support arms;

(f) a ball nut element which is threadedly received on said lead screw for moving therealong when said lead screw is rotated by said motor, said nut element being arranged between said first and said second pairs of support arms, said nut element being mounted on said lead screw for travelling therealong; and

(g) upper pivoting and supporting means connected to said nut element for pivoting said nut element about an upper horizontal axis and for supporting said link mechanism, said upper horizontal axis being movable parallel to and being arranged elevated above said lower horizontal axis,

such that said upper pivoting and supporting means selectively adjusts the elevation of said link mechanism above said lower frame when said motor is in operation and said nut element travels along said lead screw, thereby moving said upper frame to a selected position, said upper pivoting and supporting means further comprising a horizontal pivot at each of two corresponding sides, each of said pivots being rotatable in a respective one of said openings, said upper pivoting and supporting means also comprising a U-shaped yoke, said yoke having two parallel side stand-offs and two parallel bars interconnecting said stand-offs, said bars forming a free space in between, said ball nut being attached to said interconnecting bars such that said lead screw extends into said free space, and said pivots being connected to said side stand-offs for pivoting said ball nut about said upper horizontal axis.

4,451,946

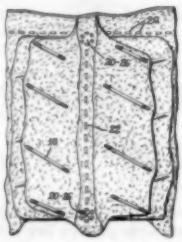
POCKETED SPRING ASSEMBLY

Walter Stumpf, Dunwoody, Ga., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Nov. 20, 1981, Ser. No. 323,574

Int. Cl.³ A47C *27/09*

U.S. Cl. 5—477 **9 Claims**



1. An improved pocketed coil spring assembly of the type having at least one continuous strip of coil springs arrayed in multiple rows of springs, said coils each being encased in individual adjacent pockets formed between layers of pocketing sheet material by joining together said layers between adjacent pockets,

wherein the improvement comprises the joining together of adjacent rows of springs by joining the pocket sheet material of said strips together between said pockets at intervals along said adjacent strips by a line of connection substantially parallel to the axis of the coils, the length of said line of connection adapted to be of a length sufficient to achieve a desired firmness in the assembly.

4,451,947

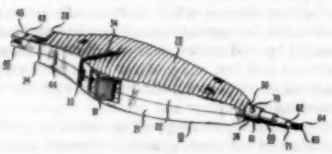
ELECTRICAL WIRE HANDLING TOOL

George Frieber, Basking Ridge, N.J., assignor to A T & T Bell Telephone Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 178,032, Aug. 14, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 402,202

Int. Cl.³ H02G *1/00*

U.S. Cl. 7—107 **7 Claims**



1. An electrical wire handling tool comprising:

a handle having first and second recesses in oppositely disposed ends and a third recess in an intermediate internal region of the handle;

means mounted in the first handle recess for coupling electrical wires to electrical connectors, the coupling means comprising a generally rectangular shaped member having connector engaging heads at oppositely disposed ends, the member being reversibly mountable within the first handle recess, one of the connector engaging heads including first and second slots which are oriented generally perpendicularly with respect to one another, the first slot completely traversing the head and the second slot partially traversing an interior region of the head, the first slot being adapted for engaging a single contact connector and the second slot being adapted for engaging alignment tabs protruding from the single contact connector, the head further including at least one wire engaging aperture on an end face of the head adjacent to the first and second slots for positioning a wire for attachment to the connector;

means affixed in the second handle recess for removing electrical wires from electrical connectors; and

means housed within the third handle recess for cutting completely through electrical wires.

4,451,948

WIRE STRIPPING TOOL

Robert R. Goodrich; Charles L. Krumreich, both of Indianapolis, and Robert J. O'Connor, Greenfield, all of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1982, Ser. No. 363,506

Int. Cl.³ B25F *1/00*; H02G *1/12*; B26B *27/00*

U.S. Cl. 7—107 **6 Claims**

1. A tool for stripping insulation from an insulated cable comprising:

support means including means for accommodating the insulated cable;

means extending into the cable accommodating means for cutting an incision in the insulation of an insulated cable positioned in the cable accommodating means; and

resilient means supported on the support means;

the resilient means including means for cooperating with the support means to retain the resilient means in either a first or a second position with respect to the support means, the resilient means in the first position being spaced from the cable accommodating means to facilitate the positioning of an insulated cable in the cable accommodating means and in the second position both holding an insulated cable in the cable accommodating means and biasing the cable against the cutting means.

4,451,949

SAFETY SHOE AND METHOD FOR MAKING SAME

Thomas F. Long, Florissant, Mo., assignor to Interco Incorporated, St. Louis, Mo.

Filed Jul. 23, 1981, Ser. No. 286,393

Int. Cl.³ A43D *21/00*

U.S. Cl. 12—146 C **3 Claims**

1. In the method for making safety shoes, comprising the steps of:

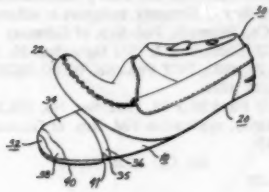
(a) providing a net-fit, closed bottom lining;

(b) inserting a slip last into said lining;

(c) placing a net-fit, upper portion having a forepart region and a back part region onto the last and in contact with

said upper, while leaving said upper forepart region raised over said lining forepart region;

(d) attaching said upper back part region to said lining back part region;



(e) placing a steel toe sub-assembly onto said lining forepart; and

(f) pulling said upper forepart region over said lining forepart thereby enclosing said steel toe sub-assembly between said upper and said lining.

4,451,950

LONG-SPAN BRIDGES

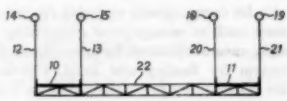
John R. Richardson, Kingston on Thames, England, assignor to NMI Limited, Feltham, England

Filed Dec. 29, 1981, Ser. No. 335,127

Claims priority, application United Kingdom, Jan. 8, 1981, 8100448

Int. Cl.³ E01D *11/00, 17/00*

U.S. Cl. 14—18 **11 Claims**



7. A suspension bridge, comprising spaced towers; two spaced, parallel spans extending between said towers, each said span including at least one suspension cable, an elongate deck extending between said towers and having a width, and plural hangers which support said deck from said suspension cable, each said span permitting said deck thereof to twist about its longitudinal axis, said spans being spaced by an air gap having a width greater than said width of each said deck; and stiff transverse beams which extend across said air gap, are provided at spaced intervals along said spans, and are connected to said decks so that said decks behave torsionally as a single, substantially rigid body.

4,451,951

ENGINE-DRIVEN BLOWER/DUST COLLECTOR

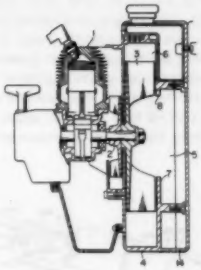
Masatoshi Satoh, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,153

Int. Cl.³ A47L *9/08*

U.S. Cl. 15—330 **1 Claim**

1. An engine-driven blower/dust collector comprising: an engine (1) having a shaft (2); a fan (3) directly connected to said shaft (2); a fan case (4) accommodating said fan (3); a partition wall (7) dividing the internal space of said fan case (4) in the axial direction of said shaft (2) into two sections (5 and 6) and having an opening (8) opposing to the central portion of said fan (3), the axially outer section (5) constituting a suction chamber for said fan (3) while the axially inner section (6) constituting a discharging chamber for said fan (3); an opening surface (11) having openings (9 and 10) arranged in a common plane and communicated with said suction chamber (5) and discharge chamber (6), respectively, said opening surface (11) being formed in the peripheral wall of said fan case (4); an air-switching slide pipe (12) slidable on said opening surface (11) in the axial direction of said shaft (2) so as to select one or both of said openings (9, 10) in said opening surface (11); and



means for connecting a dust sucking pipe (13), dust collecting bag (15) or the like to nozzles (20 and 21) communicating to openings (9', 10') of said air-switching slide pipe (12) corresponding to said openings (9, 10) of said opening surface (11).

4,451,952

SUSPENSION DEVICE FOR A POWER-DRIVEN HANDTOOL

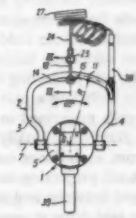
Jean-Frédéric Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, France

Filed Jun. 11, 1982, Ser. No. 387,490

Claims priority, application France, Jul. 7, 1981, 81 13317

Int. Cl.³ A22B *3/02*

U.S. Cl. 17—1 B **2 Claims**



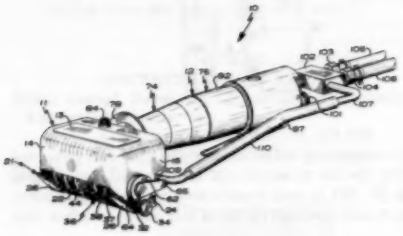
1. A suspension device for a power-driven handtool and particularly of a slaughtering pistol or so-called humane killer, comprising a pistol-grip located in a vertical longitudinal midplane of said handtool, wherein said suspension device comprises a yoke whose two arms are capable of free pivotal motion with respect to the handtool body by means of two pivots on which the ends of said yoke arms are rotatably mounted on said body and the common horizontal geometrical axis of which passes substantially through the center of gravity of the handtool unit in a direction at right angles to the vertical longitudinal midplane aforesaid, the apex of said yoke being constituted by a bow having the shape of a circular arc whose center is located at the center of gravity of the handtool, said bow being supported by and capable of traveling on a roller which is freely rotatable on a spindle supported by the two ends of the arms of a shackle whose apex is adapted to be attached to a suspension member.

4,451,953

HAND HELD SKINNING DEVICE

Lyndon R. Leining, Austin, Minn., assignor to Geo. A. Hormel & Company, Austin, Minn.

Filed May 19, 1983, Ser. No. 496,101
Int. Cl.³ A22B 5/16
U.S. Cl. 17—21 8 Claims



1. An improved hand-held power skinning knife, comprising:

a housing including a top wall and opposed side walls, means defining guides in said side walls;

an elongate handle connected with said housing, a motor in said handle, drive means on said handle connected with said motor;

a skinning blade assembly including a blade holder, guide means on said blade holder engaging said guides in said side walls to mount the blade holder on the housing, a disposable blade on said blade holder, a retainer element on said blade holder and projecting outwardly therefrom;

a tooth roll assembly including a pair of similar, generally cylindrical tooth rolls positioned in axially aligned relation and having a plurality of axially spaced apart flanges projecting therefrom, each flange on each tooth roll having a plurality of teeth projecting outwardly therefrom, a ring gear positioned between and secured to said tooth rolls and engaging said drive means;

an elongate shaft journaled in said side walls of the housing and extending through said tooth roll assembly to mount the latter thereon, one end portion of said shaft having an eccentric cam thereon located exteriorly of the adjacent side wall;

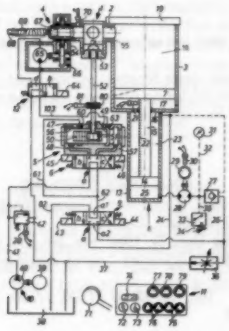
a lock element on said eccentric cam cooperating with the adjacent side wall of the housing to prevent axial displacement of the shaft in one direction, said retainer element being disposed in obstructing relation with said lock element and preventing axial displacement of the shaft in the opposite direction, said lock element and said shaft being revolvable as a unit between locked and unlocked positions, said lock element when in the locked position engaging said retainer element to lock the blade assembly in mounted relation on the housing, said lock element when in the unlocked position permitting ready removal of the skinning blade assembly, said shaft and said tooth roll assembly.

4,451,954

APPARATUS FOR CONSECUTIVELY METERING DISCRETE AMOUNTS OF A DIVISIBLE MASS, PARTICULARLY SAUSAGE-MEAT

Johann Müller, Biberach, and Georg Staudenrausch, Rissegg, both of Fed. Rep. of Germany, assignors to Albert Handtmann GmbH & Co., Biberach, Fed. Rep. of Germany

PCT No. PCT/DE81/00072, 371 Date Dec. 29, 1981, 102(e) Date Dec. 29, 1981, PCT Pub. No. WO81/03259, PCT Pub. Date Nov. 26, 1981
PCT Filed May 15, 1981, Ser. No. 336,382
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018793
Int. Cl.³ A22C 11/06
U.S. Cl. 17—39 19 Claims



1. Apparatus for consecutively metering discrete amounts of a divisible mass such as sausage meat comprising a hydraulic system, feeding means operated by pressurized fluid in said hydraulic system for feeding said mass, a power-operated cut-off device operated by pressurized fluid in said hydraulic system and operable, when open, to allow delivery of said mass by said feeding means and, when closed, to cut off delivery of said mass, means for metering the amount of mass fed by said feeding means and operable to cause said cut-off device to close, means controlling the flow of pressurized hydraulic fluid including a hydraulic cylinder and piston operable to utilize full hydraulic pressure in said system to operate said feeding means and said cut-off device, a twist-off device operable on the fed mass, said cylinder and piston being operable to actuate said twist-off device under full hydraulic pressure in said system upon closing of said cut-off device.

4,451,955

CRIMP-TYPE CLAMP

Peter W. Kern, Glendale, and James J. Richter, Jackson Heights, both of N.Y., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 379,596, May 19, 1982, abandoned. This application Sep. 23, 1983, Ser. No. 535,540
Int. Cl.³ B65D 63/02
U.S. Cl. 24—20 CW 8 Claims

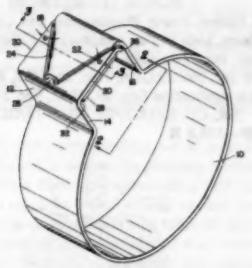
1. A hose clamp for gripping and securing hose, said hose clamp comprising:

a continuous curvelinear band,

first and second offset sections that are connected to opposite ends of said curvelinear band;

a slotted top end connected to said first offset section, said slotted top end having an end portion that is located adjacent the internal face of said second offset section; and a mating top end connected to said second offset section, said mating top end having an end portion that is located adjacent the internal face of said first offset section, said mating top end having tabs that are in registry with the

slots of said slotted top end, said mating top end being interleaved with said slotted top end to provide a double



wall connection of the slotted top end with the mating top end.

4,451,956

CLASPING DEVICE

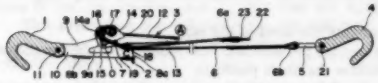
Akira Kawahara, Kagawa, Japan, assignor to Ryusyo Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1981, Ser. No. 288,931

Claims priority, application Japan, Aug. 8, 1980, 55-113022[U]; Oct. 27, 1980, 55-153671[U]; Apr. 11, 1981, 56-52175[U]

Int. Cl.³ B65D *68/08*

U.S. Cl. 24—68 CD **14 Claims**



1. A clasping device comprising:

a body having a pair of side plate members in side by side spaced relation and two connecting members extending between said plate members and connecting said plate members;

a first hook connected to a first end of said body, said connecting members extending between said plate members at a second end of said body remote from said first member, said connecting members being spaced for defining a clearance therebetween;

a manipulatable lever means pivotally connected to said body for movement between a locked position and an unlocked position, said lever means having a pair of lever members connected to each other in spaced relation and each having an end inserted in the space between said side plate members of the body, a strap connecting member and a strap pressing member extending between said lever members, the lever members being pivotally connected to corresponding side plate members at a point offset from said strap pressing member; and

a flexible strap having a second hook connected thereto, said strap being connected around strap connecting member and having parallel portions extending around said strap pressing member and between the strap pressing member and the axis of the pivotal connections of the lever members to the side plate members and between said connecting members, said strap pressing member, when said lever means is in the locked position, pressing said strap for securing said strap in said clasping device and, when said lever means is in the unlocked position, releasing said strap for permitting movement of said strap around said strap connecting member,

said connecting members being positioned on said body with one connecting member more remote from said strap connecting and strap pressing members for, when said body is in a normal upright position, causing said strap portions extending between said connecting members to engage only the connecting member which is closer to said strap connecting and strap pressing members and, when said body is in an upside down position, to cause said strap portions to engage only the connecting member which is more remote from said strap connecting and strap pressing members, and the path of said strap portions in both positions being kept between said strap pressing member and said axis of the pivotal connections for exerting a turning force on said lever means tending to pivot said lever means to the locked position.

4,451,957

APPARATUS FOR JOINING THE ENDS OF A BELT TO MAKE IT ENDLESS

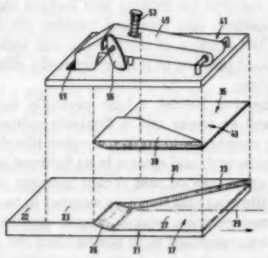
Johannes Lefferts, Enschede, and Roelof Roelofs, Hengelo, both of Netherlands, assignors to Steg Siebtechnik GmbH, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,948

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020690

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—573 **3 Claims**



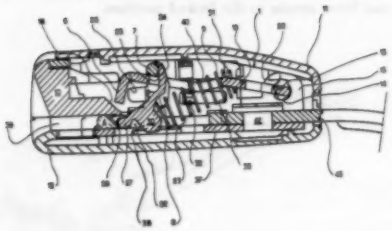
1. A slide for joining two initially overlapping belt ends together wherein each end is provided with a plurality of loops across the width thereof comprising a base plate, an intermediate plate, a top plate, a first tapered channel located in a plane of said base plate between said base plate and the intermediate plate, and a second tapered channel located in the plane of said intermediate plate between said intermediate plate and said top plate, said channels, when viewed perpendicular to said base plate forming an acute-angled overlapping area for receiving the overlapping belt ends, said acute-angled overlapping area terminating in a narrow overlapping area adapted to bring the loops of the overlapping belt ends into superimposed relation with respect to each other and said first channel having an upwardly extending slope in the vicinity of said narrow overlapping area whereby movement of the slider between said overlapping belt ends will bring the loops on said overlapping belt ends into superimposed relation and bring the loops on the belt ends in said first channel upwardly into meshing engagement with the loops on the belt end located in said second channel.

4,451,958

SEAT BELT BUCKLE WITH PIVOTING LATCH

Paul J. Robben, Kermt-Hasselt; Raymond Legros, Brussels, both of Belgium, and Udo Rittersdorf, Stockelsdorf, Fed. Rep. of Germany, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 19, 1982, Ser. No. 399,399
Claims priority, application France, Jul. 27, 1981, 81 14566
Int. Cl.³ A44B 11/28, 11/25
U.S. Cl. 24—636 9 Claims



1. Closure buckle for safety belt system comprising:

a U shaped metal base defining a path of introduction for a tongue having at least one latch aperture and a pair of lateral upstanding flanges;

a latch locking element, arranged to tilt vertically in said base around its rear part and having at its front part at least one projecting catch capable of cooperating with said latch aperture of the tongue, in a locked configuration;

an ejector slidably displaced in said base in the path of the tongue;

a retaining member for locking said locking element in the locked position, said retaining member displaceable between a first position of retention of said locking element and a second position of release vertically offset from said first position;

a rocker member having a base pivotally linked to said ejector and an upper tab in floatable contact with said retaining member, said rocker member tiltable between a first position with said ejector in its forward most position and the upper tab of said rocker member in a vertical position allowing said retaining member to be displaced to said second position, and a second position with said ejector in its rearward most position and the upper tab of said rocker member in a horizontal position locking said retaining member in said first position;

an elastic means acting on said rocker member, said elastic means producing a first force urging said rocker member towards its first position displacing said ejector forward and producing a second force urging said rocker member towards its second position displacing said retaining member to said first position;

a push button having first means of engagement operative to displace said retaining member from its first position towards its second position, when the push button is depressed;

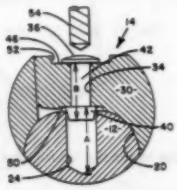
and second means of engagement having ramps capable of cooperating with the front part of said locking element and assisting to vertically lift said locking element from said latch aperture and lift said retaining member to its second position after the first means of engagement has displaced the retaining member from its first position, the displacement of said retaining member to said second position tilting said rocker member sufficiently to permit said elastic means to produce said first force urging said rocker member to its first position.

4,451,959

METHODS FOR SECURING A ROTOR BLADE WITHIN A ROTOR ASSEMBLY AND REMOVING A ROTOR BLADE THEREFROM

Arthur J. Miller, North Huntingdon, and Charles H. Kostors, Greensburg, both of Pa., assignors to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Division of Ser. No. 221,076, Dec. 29, 1980, Pat. No. 4,400,137.
This application Sep. 29, 1982, Ser. No. 427,384
Int. Cl.³ B21K 3/04; B23P 15/02, 15/04
U.S. Cl. 29—156.8 R 5 Claims



1. A method for removing a rotor blade from a rotor assembly; the rotor assembly including a rotor disc defining an axially extending blade groove and a pin socket radially extending inward from an outside surface of the rotor disc; the rotor blade including a root disposed within the blade groove, and a platform overlaying the outside surface of the rotor disc and defining a pin aperture; the rotor assembly further including a locking pin extending through the pin aperture and into the pin socket to lock the rotor blade to the rotor disc, the locking pin having a head projecting over the blade platform, a base projecting beneath the blade platform, and a stem extending between the head and the base, the method comprising the steps of:

removing the head of the pin;

moving the pin stem and base radially into the pin socket and below the blade platform;

axially sliding the blade root out of the blade groove; and

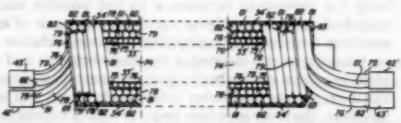
pulling the pin stem and base out of the pin socket.

4,451,960

METHOD OF PRODUCING MULTIPLE COIL, MULTIPLE TUBE HEAT EXCHANGER

Victor D. Molitor, Denver, Colo., assignor to Molitor Industries, Inc., Englewood, Colo.

Filed Mar. 15, 1979, Ser. No. 20,615
Int. Cl.³ B23P 15/16; B21D 53/06
U.S. Cl. 29—157.3 R 13 Claims



1. A method of producing a multiple coil, liquid to liquid heat exchanger, wherein said coils are essentially concentric and are formed of multiple tubes, generally circular in cross section, in alternating longitudinal succession and through which a different liquid is circulated for transfer of heat to or from the liquid in adjoining tubes, comprising:

winding a first set of alternating, individual tubes simultaneously and in esentially abutting relation longitudinally to form a generally cylindrical inner coil;

applying a heat conductive mastic to the outside of said inner coil;

winding a second and corresponding set of individual tubes simultaneously and in essentially abutting relation longitudinally to form a second coil surrounding said inner coil,

said second set of tubes being wound against the tubes of said first coil so as to press said tubes of said second coil against said tubes of said first coil and simultaneously compress the mastic layer and force said mastic into the spaces between adjoining tubes of said first coil, into the spaces between adjoining tubes of said second coil and into the spaces between generally opposed tubes of said first and second coils;

applying a heat conductive mastic to the outside of said second coil;

winding a third and corresponding set of individual tubes simultaneously and in essentially abutting relation longitudinally to form a third coil surrounding said second coil, said third set of tubes being wound against the tubes of said second coil so as to press said tubes of said third coil against the tubes of said second coil and simultaneously compress said mastic layer and force said mastic into the spaces between adjoining tubes of said second coil, into the spaces between adjoining tubes of said third coil and into the spaces between generally opposed tubes of said second and third coils; and

similarly applying mastic to the outside of a coil and winding a set of tubes simultaneously and to form the next outer coil and force said mastic into the space between adjoining tubes of said previous coil, into the spaces between adjoining tubes of said next outer coil and into the spaces between generally opposed tubes of said previous coil and said next outer coil.

4,451,961

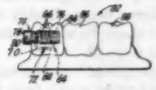
METHOD OF MAKING DETENT DEVICE FOR A REMOVABLE DENTAL PROSTHESIS

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Division of Ser. No. 251,867, Apr. 7, 1981, Pat. No. 4,380,434. This application Sep. 27, 1982, Ser. No. 424,525

Int. Cl.³ B23P *13/00*

U.S. Cl. 29—160.6 **3 Claims**



1. A method of securing a detent device in a dental prosthesis comprising:

positioning a spring member having helical loops for determining location of the detent device in the dental prosthesis to be formed;

inserting a threaded plug into the loops of the spring member so that the loops engage the threads of the plug;

forming the dental prosthesis around the spring member and the plug;

removing the plug from the formed dental prosthesis leaving an internally threaded bore in the dental prosthesis for cooperation with the spring member;

providing external threads on the detent device having a spring loaded plunger; and

threading the detent device into the threaded bore of the dental prosthesis so that the spring member loops engage the threads of the detent device and an end portion of the plunger projects outwardly from the dental prosthesis.

4,451,962

POROUS FILTER BLOCK AND METHOD OF MANUFACTURING THE SAME

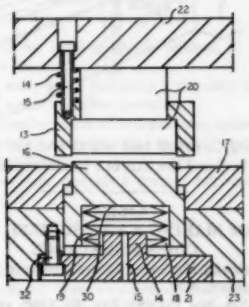
Jürgen Cornelsen, and Werner Schneider, both of Oelde, Fed. Rep. of Germany, assignors to Haver & Boecker, Oelde, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 332,357, Dec. 18, 1981, abandoned, which is a continuation of Ser. No. 160,097, Jun. 16, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,633

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926533

Int. Cl.³ B23P *15/00*; **B01D** *39/10*

U.S. Cl. 29—163.5 F **2 Claims**



1. A method of manufacturing a porous filter block for filtering melt synthetic plastic materials which includes a plurality of superimposed filter layers of wire fabric or metal non-woven fabric, the method comprising the steps of placing a plurality of filter layers in superimposed relationship between a stamp and a pressure plate of a die and moving the stamp to said pressure plate and compressing said layers throughout their surfaces under pressure from 10 to 40 kp/cm^2, to obtain a preliminary filter pack; providing an elastic support for the pressure plate and punching the filter layers by further moving said stamp to said pressure plate; providing a rigid support for said pressure plate, and cold pressing said filter pack into a filter block under pressure from 700 to 1.400 kp/cm^2, said compressing step, said punching step and said cold pressing step being performed in a consecutive order so as to obtain a filter block having from the top to the bottom inlet layers, intermediate layers and outlet layers, in which the intermediate layers are of identical mesh size and have a mesh size smaller than that of said inlet layers and outlet layers.

4,451,963

WHEEL AND TIRE POSITIONING SYSTEM

Willis F. Karr, Key Largo, Fla., and John P. Kane, Sterling Heights, Mich., assignors to Acme Precision Products, Inc., Detroit, Mich.

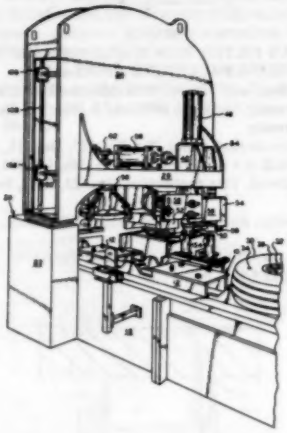
Filed Apr. 3, 1981, Ser. No. 250,629

Int. Cl.³ B23Q *17/00*; **B23P** *19/00*

U.S. Cl. 29—407 **15 Claims**

1. The method of orienting a tire and its wheel to each other about a common axis wherein a wheel is located within a deflated tire and the tire and wheel each have reference indicia defined thereon, the wheel and tire indicia initially being randomly angularly related to each other about said axis, comprising the steps of sensing the angular relationship of the wheel and tire indicia to each other about the wheel and tire axis, recording and comparing said angular relationship of said

wheel and tire indicia, and rotating said wheel and tire relative to each other about said axis as determined by said recording



and comparing to orient said wheel and tire indicia to each about said wheel and tire axis in a predetermined relationship.

4,451,964

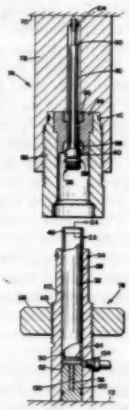
METHOD OF MAKING A PRESSURIZED PNEUMATIC COUNTERBALANCE

George C. Ludwig, Florence, S.C., assignor to AVM Corporation, Jamestown, N.Y.

Division of Ser. No. 122,850, Feb. 20, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 417,858

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—437 **15 Claims**



1. A method of assembly of pneumatic counterbalance units and the likes which are made at least from a closed end cylinder subassembly and a piston subassembly including a piston means, piston means, shaft, shaft bushing and shaft to cylinder annular seal means and wherein the assembled counterbalance unit has the piston subassembly with the piston means, shaft bushing and annular seal means assembled within the cylinder with one end of the shaft projecting from the piston means out of the other end of the cylinder subassembly which is an open end and is crimped to block removal of the piston assembly comprising: pressurizing of the piston assembly and cylinder subassembly in a common sealed environment with gas under pressure of at least several atmospheres; insertion of the piston means and its seal means and shaft bushing into and within the cylinder subassembly, which includes a predetermined quantity of lubricating oil, with immediate subsequent radially inward crimping of the cylinder subassembly open end, while said piston subassembly and at least the other end portion of the cylinder subassembly are maintained pressurized by said gas, to retain the piston assembly and gas under pressure within said cylinder subassembly.

4,451,965

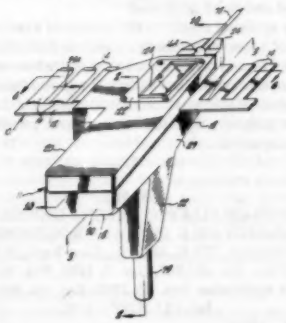
METHOD FOR INSTALLING A SLEEVE ON A SUBSTRATE

William D. Carlomagno, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 114,617, Jan. 23, 1980, Pat. No. 4,365,400. This application Sep. 20, 1982, Ser. No. 419,805

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—450 **4 Claims**



1. A method for installing a non-cylindrical sleeve on an elongated substrate, the sleeve being slidably and tightly arranged in a non-cylindrical shape on a non-cylindrical holder, the method comprising the steps of:

(a) selecting a die having opposed first and second openings;

(b) forcing only a first part of the sleeve from the holder into the first opening of the die having a second part of the sleeve on the holder, the die forming at least a portion of the first part of the sleeve into a substantially cylindrically configuration;

(c) stopping the step of forcing so that there is no relative movement between the sleeve and the die;

(d) while there is no relative movement between the sleeve and the die, inserting the elongated substrate into the substantially cylindrical portion of the sleeve;

(e) thereafter, forcing the second part of the sleeve onto the elongated substrate; and

(f) removing the substrate with the sleeve thereon from the die through the second opening.

4,451,966

HEAT TRANSFER TUBE ASSEMBLY

Marlow Lee, Clawson, Mich., assignor to H & H Tube & Mfg. Co., Southfield, Mich.

Division of Ser. No. 112,393, Jan. 15, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,555

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—521 **4 Claims**

1. A method for manufacturing a heat transfer tube, said method comprising concentrically disposing a second metallic tubular conduit member within a first metallic tubular conduit member, providing said first tubular conduit member with an inner diameter greater than the outer diameter of said second tubular conduit member such that a substantially annular con-

duit is formed between the exterior surface of said second tubular conduit member and the interior surface of said first tubular conduit member, forming a plurality of substantially domed-shaped concave dimples in the peripheral wall of said first conduit member projecting inwardly radially, and forming said inwardly projecting dimples deep enough to simultaneously cause a top portion of each of said substantially dome-

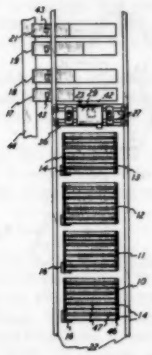
shaped dimples to indent the peripheral surface of said second tubular conduit member, thereby forming a substantially dome-shaped complementary concave recess in said peripheral surface of said second tubular conduit member for securely locking and holding said second tubular conduit member within said first tubular conduit member by forced engagement of the top portion of each dimple in a corresponding concave recess.

4,451,967

CRANE SYSTEM SHEET FEEDER METHOD AND APPARATUS

Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Apr. 14, 1982, Ser. No. 368,372
Int. Cl.³ B23Q 7/00
U.S. Cl. 29—564.3 **8 Claims**



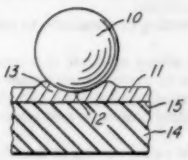
1. A method for continuously loading bundles of bound sheets, bound with binding, into a plurality of sheet feeders by means of an overhead crane, comprising the steps of positioning a plurality of discrete collections of the bundles of bound sheets in positions relative to respective ones of the sheet feeders, each collection of bundles being sheets with printings thereon varying from collection to collection, electronically sensing the quantity of the sheets in each of the sheet feeders and generating a signal relative to each respective sheet feeder and in response to a minimum supply of the sheets in each respective sheet feeder, actuating the overhead crane by virtue of the signal and operating the crane to move to one of the collections of bundles and remove one of those bundles from said one collection, and actuating the overhead crane by virtue of the signal to deposit said one bundle onto only the one of the sheet feeders which is related to said one collection of bundles.

4,451,968

METHOD AND DEVICE FOR PROVIDING AN OHMIC CONTACT OF HIGH RESISTANCE ON A SEMICONDUCTOR AT LOW TEMPERATURES

Millard Jensen, Balch Springs, and Jules D. Levine, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1981, Ser. No. 299,694
Int. Cl.³ H01L 31/04, 31/18
U.S. Cl. 29—572 **20 Claims**



1. A method for making ohmic contact to a solar array, comprising the steps of:

providing a solar array including a plurality of substantially spherical semiconductor particles;

pressing respective ones of said particles against a metal foil while applying pressure and low heat between said particle and said foil;

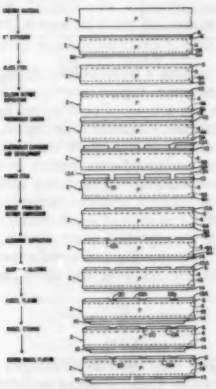
whereby an ohmic contact is formed between said particle and said foil.

4,451,969

METHOD OF FABRICATING SOLAR CELLS

Arup R. Chaudhuri, West Concord, Mass., assignor to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Jan. 10, 1983, Ser. No. 456,621
Int. Cl.³ H01L 31/18
U.S. Cl. 29—572 **23 Claims**



1. Method of fabricating solid state semiconductor devices comprising:

(a) providing a silicon substrate having first and second opposite surfaces;

(b) forming a PN junction in said substrate adjacent said first surface;

(c) forming on said first surface a polysilazane coating having a relatively fast etch rate relative to a selected etchant;

(d) covering said polysilazane coating with an adherent coating of a photoresist material;

(e) exposing said photoresist coating to radiant energy through a mask defining a predetermined two-dimensional pattern;

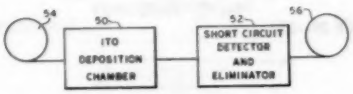
(f) chemically developing said photoresist so that selected portions of said resist are removed from said polysilazane coating according to said predetermined pattern;
(g) removing those portions of said polysilazane coating which are not covered by said photoresist so that selected portions of said first surface are exposed to the atmosphere;
(h) heating said silicon substrate at a temperature and for a time sufficient to (1) effect removal of said photoresist material by pyrolysis and (2) modify said polysilazane coating so that it has a relatively low etch rate relative to said selected etchant;
(j) applying a coating of aluminum to said second opposite surface;
(k) heating said silicon substrate to a temperature and for a time sufficient to cause the aluminum constituent of said aluminum coating to alloy with said silicon ribbon;
(l) applying a nickel coating to said selected portions of said first surface;
(m) sintering said nickel coating so that the nickel and silicon react to form a nickel silicide at their interface;
(n) contacting said nickel coating with an etchant to remove unbonded nickel; and
(o) over-coating said nickel coating with copper.

4,451,970

SYSTEM AND METHOD FOR ELIMINATING SHORT CIRCUIT CURRENT PATHS IN PHOTOVOLTAIC DEVICES

Masatsugu Izu, Southfield, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Oct. 21, 1982, Ser. No. 435,890
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—574 **32 Claims**



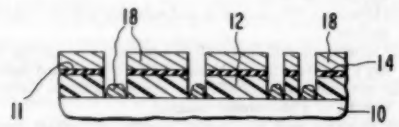
1. In a process of making a photovoltaic device of the type including a semiconductor region overlying an elongated conductive substrate and a layer of conductive light transmissive material overlying said semiconductor region, a method of eliminating a short circuit current path extending from said substrate through said semiconductor region to said conductive light transmissive material, comprising applying a thin layer of an electrolyte solution to said conductive light transmissive material in the area of said short circuit current path and passing a current through said short circuit current path and said electrolyte for removing said conductive light transmissive material from contact with said short circuit current path.

4,451,971

LIFT-OFF WAFER PROCESSING

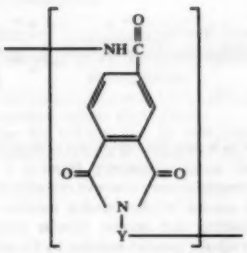
Alvin Milgram, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 2, 1982, Ser. No. 404,110
Int. Cl.³ H01L *21/28*
U.S. Cl. 29—578 **3 Claims**

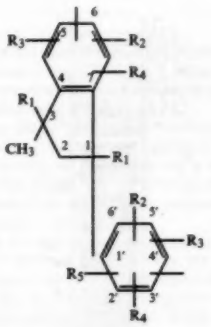


1. An improved process for depositing a metallization pattern on the surface of a semiconductor structure, said process comprising:

applying a layer of a polyimide on the surface of the semiconductor, said polyimide being a copolymer of an aromatic cycloaliphatic diamine and a dianhydride consisting essentially of the recurring unit having the formula



wherein Y is a divalent organic radical selected from carbocyclic-aromatic, aliphatic, araliphatic, cycloaliphatic, and heterocyclic radicals, combinations of these, and radicals with heteroatom-containing bridging groups where the heteroatom in the bridge is oxygen, sulfur, nitrogen, silicon or phosphorus, provided that, out of the total number of polyamide-imide recurring units, 1 to 100 percent of such units have Y equal to a phenylindane radical of the structural formula



wherein

R_1 is a hydrogen or lower alkyl, and

R_2, R_3, R_4 and R_5 are independently hydrogen, halogen or lower alkyl, and either aromatic ring of the unsymmetrical phenylindane radical may be bonded to an amide or imide nitrogen;

applying a barrier layer over the polyimide layer;

applying a mask layer over the barrier layer;

defining the desired metallization pattern in the mask layer;

etching the barrier layer and polyimide layer to expose the surface of the semiconductor in a pattern which corresponds to the desired metallization pattern on the mask layer;

metallizing the surface of the semiconductor which has been exposed by the etching; and

removing the polyimide and barrier layers which remain by dissolving the polyimide layer in a substantially non-polar solvent.

4,451,972

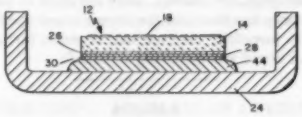
METHOD OF MAKING ELECTRONIC CHIP WITH METALIZED BACK INCLUDING A SURFACE STRATUM OF SOLDER

Victor A. Batinovich, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 113,805, Jan. 21, 1980. This application Apr. 12, 1982, Ser. No. 367,785

Int. Cl.³ H01L *21/92*

U.S. Cl. 29—583 **11 Claims**



1. A method for the manufacture of electronic chips for joining to a metallic lead frame comprising:

depositing a first stratum of metal in strong adhering relation on the back of a fused silicon base wafer carrying a plurality of electronic circuit elements on its face;

depositing a stratum of a second metal to which lead or tin based solder will readily adhere;

depositing a stratum of an alloy of said first and second metals on the surface of said stratum of first metal, said stratum of second metal is deposited on the surface of said stratum of alloy in which the metal of said first stratum is chromium and said second metal is silver;

depositing a stratum of lead or tin based solder on said stratum of said second metal;

dividing said wafer into separate electronic chips with said strata adhering to their backs;

at least one of said first and second metals being resistant to passage of copper atoms at soldering and operational temperatures;

depositing metal having high heat conductivity as a stratum having a thickness to improve heat conductivity from said silicon base to a lead frame to which said chips may be joined; and

said stratum of solder being of sufficient thickness to form a bond to said lead frame when a chip from said wafer is laid on said lead frame and subjected to heat to fuse said solder.

5. A method for the manufacture of electronic chips as defined in claim 1 in which said wafer and associated metal strata is divided into chips by cutting with an abrasive saw.

4,451,973

METHOD FOR MANUFACTURING A PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICE AND A LEAD FRAME THEREFOR

Kenichi Tateno, Shiga; Masami Yokozawa, Kyoto; Hiroyuki Fujii, Osaka; Mikio Nishikawa, Kyoto; Michio Katoh, Osaka, and Fujio Wada, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 13, 1982, Ser. No. 367,809

Claims priority, application Japan, Apr. 28, 1981, 56-64893; Apr. 30, 1981, 56-64307[U]

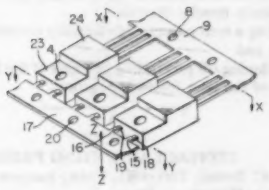
Int. Cl.³ H01L *21/56, 21/58*

U.S. Cl. 29—588 **2 Claims**

1. A method for manufacturing a plastic encapsulated semiconductor device, comprising the steps of:

(a) assembling a semiconductor substrate with a lead frame having a first connecting band connected to external leads of a semiconductor device assembly extending from one side of a substrate support serving as a heat sink, and a second connecting band connected to a plurality of strips of said semiconductor device assembly extending from another side of said substrate support and having portions of small cross-sectional areas and of predetermined lengths, the small cross-sectional areas being perpendicular to an extending direction of said plurality of strips, and said plurality of strips being thinner than said substrate support and rear surfaces of said plurality of strips being located above a rear surface of said substrate support;

(b) clamping said external leads and said plurality of strips between upper and lower molds such that parts of said portions of small cross-sectional areas of said plurality of strips are disposed in a cavity formed by said upper and lower molds and the remainder of said portions of small cross-sectional areas are disposed between said upper and lower molds separate from said cavity and that said substrate support floats in said cavity with the rear surface of said substrate support being spaced apart from a bottom surface defining said cavity by a distance in the range from 0.3 to 0.5 mm;



(c) injecting an encapsulating plastic into said cavity; and

(d) cutting a connecting portion between said external leads and said first connecting band, and said portions of small cross-sectional areas of said plurality of strips, extending externally from an encapsulating plastic housing formed by said injecting step along a surface of the encapsulating plastic.

4,451,974

PRESSURE CASTING PROCESS

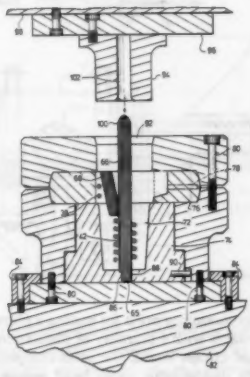
Jobst U. Gellert, 7A Prince St., Glen Williams, Ontario, Canada

Filed Apr. 16, 1982, Ser. No. 369,192

Claims priority, application Canada, Mar. 31, 1982, 400011

Int. Cl.³ H05B *3/06*

U.S. Cl. 29—611 **8 Claims**



1. A method of manufacturing an integral heater nozzle for an injection molding system, the heater nozzle having a melt passage extending through a corrosion resistant inner liner therein and an electric heating element cast into an outer conductive portion, the method comprising essentially the steps of:

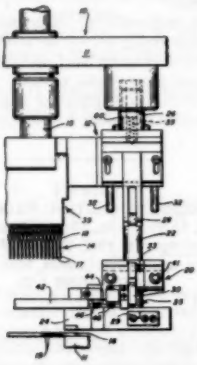
(a) pre-heating an elongated liner having first and second ends to a predetermined temperature;

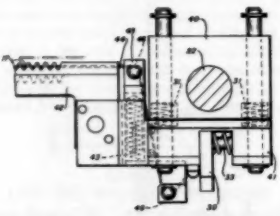
(b) mounting a coiled electric heating element in a preshaped mold;
(c) mounting the heated liner inside the heating element in the mold with the first end of the liner received in a seat in the mold to accurately locate said first end;
(d) introducing a molten conductive material into the mold around the liner to substantially cover the heating element;
(e) applying pressure to the molten material by a plunger having an opening therein which receives the second end of the liner to accurately locate the liner as the pressure is applied to remove entrapped gases and pressure cast the molten material around the liner and the heating element to closely bond it thereto;
(f) drilling a melt passage substantially centrally through the liner; and
(g) machining off protruding portions of the first and second ends of the liner following casting.

4,451,975
CONTACT MOUNTING PRESS

James S. C. Baccei, Terryville, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Jun. 14, 1982, Ser. No. 387,949
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—705 3 Claims



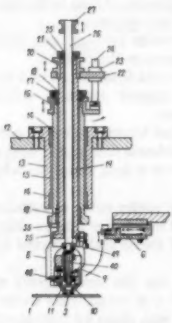


1. A contact mounting press for mating a plurality of press fit electrical contacts with a plurality of plated-through apertures in an electrical circuit board, the press comprising:
a vertically displaceable press head means for forcefully displacing said contacts into said plated-through apertures, said press head including means for gripping said contacts,
a contact locating means including:
a locating tool having a plurality of notches, each for engaging one of the contacts held by said press head to precisely align the contact with the circuit board aperture,
a wire means opposing said tool,
means for positioning the contacts between said locating tool and the opposing wire means,
means for advancing said locating tool and said wire means to positively locate each contact within one of said notches,
means for lowering said press head and said contact locating means in a rigid single motion to insert the ends of said contacts into the circuit board apertures,
means for retracting said locating tool and said wire means to disengage the contacts after the ends of said contacts have been inserted into the circuit board apertures,
means to forcefully displace said contacts further into the circuit board and achieving a press fit.

4,451,976
MOUNTING APPARATUS FOR LEADLESS ELECTRONIC PARTS

Takayuki Fujita, Hirakata; Yoshiaki Yoshida, Takatsuki; Toshiyuki Higashiura, Hirakata, and Kunio Tanaka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP81/00386, 371 Date Aug. 12, 1982, 102(e) Date Aug. 12, 1982, PCT Pub. No. WO82/02136, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 16, 1981, Ser. No. 414,256
Claims priority, application Japan, Dec. 17, 1980, 55-179456
Int. Cl.³ H05K *3/32*
U.S. Cl. 29—740 1 Claim



1. A mounting apparatus for mounting leadless electronic parts on a printed circuit board having conductive patterns by the use of adhesive, comprising:
a base;
a bearing flange;
a vertical movement synchronizing shaft which is mounted on said base through said bearing flange so as to be movable vertically and rotable;
a main shaft which is mounted in said vertical movement synchronizing shaft so as to be movable vertically such that said main shaft is coupled with said vertical movement synchronizing shaft in a rotating direction thereof;
a pusher rod which is mounted in said main shaft so as to be movable vertically;
cam follower guides which are, respectively, provided on said vertical movement synchronizing shaft, said main shaft and said pusher rod for their respective control;
a main block which is provided at a lower end of said main shaft;
a crankshaft urged at all times to rotate in one direction, which is supported by said main block;
a pinion secured to said crankshaft;
a rack which is provided on said main block so as to be meshed with said pinion;

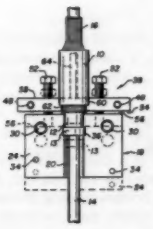
a stopper which is provided at a lower end of said vertical movement synchronizing shaft so as to control said rack;
a chuck body provided with a chuck for gripping the leadless electronic part supplied by a part feeding pusher, which is mounted on said crankshaft;
a stripper holder which is mounted in said chuck body at a central portion thereof through a compression spring; and
a stripper having a V-groove formed at a lower face thereof, which is fitted into said stripper holder;
said stripper being pushed upon downward movement of said pusher rod, whereby the leadless electronic part gripped by said chuck is taken out of said chuck so as to be pressed onto a mounting portion of said printed circuit board.

4,451,977

APPARATUS USEFUL IN REPAIR OF A TERMINATOR

James R. Matthews, Lower Sackville, and Glen A. May, Victoria, both of Canada, assignors to Her Majesty the Queen in Right of Canada, as Represented by the Minister of National Defence, Ottawa, Canada

Filed May 14, 1982, Ser. No. 378,322
Claims priority, application Canada, Jun. 17, 1981, 380014
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—748 **11 Claims**



1. Apparatus useful in repair of a termination of an outer cover of an armoured cable where the outer cover comprises a plurality of wires and the termination is effected by location of the wires between an inner body within the outer cover and an outer body outside the outer cover, the apparatus comprising:
a first block to surround the cable and grip the inner body;
a second block to surround the cable with a first surface of the second block adjacent the first block and a second surface of the second block abutting an end of the outer body;
means to force the first and second blocks apart to separate the inner and outer bodies and thus open the termination; and
a wire separator to retain the wires of the outer cover separate after the forcing open of the termination.

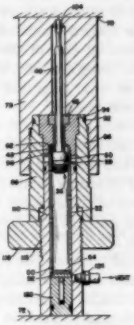
4,451,978

APPARATUS FOR MAKING A PNEUMATIC COUNTERBALANCE

George C. Ludwig, Florence, S.C., assignor to AVM Corporation, Jamestown, N.Y.

Division of Ser. No. 122,850, Feb. 20, 1980, abandoned. This application Sep. 16, 1982, Ser. No. 418,974
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—776 **26 Claims**

1. An apparatus to make a pneumatic counterbalance spring link from a pre-assembly of a closed end cylinder with the other end open and a second pre-assembled piston assembly which includes a piston shaft with a free end, a piston fixed on the other end of the shaft, and an abutment bushing and an annular seal means on the shaft with the seal means between the bushing and the piston comprising: a crimping die set adapted to be secured in a press and having at least one upper die assembly with means to releasably secure the piston assembly by the free end of the shaft, said die set also including means to hold the cylinder assembly in said press; means including the press and said die set to enable coaxial alignment and final assembly of the piston assembly and the cylinder assembly with the piston, the seal means and the bushing being inserted in the cylinder; said die set also having means providing a sealed cavity between the cylinder and said upper crimping die assembly with the piston assembly secured therein; means to introduce gas under at least several atmospheres of pressure into said sealed cavity prior to that increment of closure movement of the press which results in insertion of the seal means into said cylinder; means in said upper crimping die assembly adapted to engage and cause inward crimping of the cylinder open end during further, continued movement of said press following that increment of press movement which inserts the bushing into the cylinder.

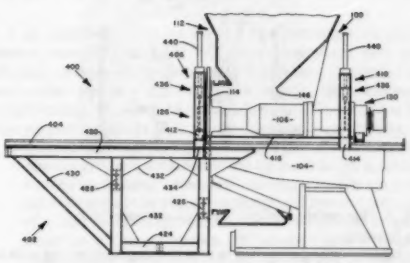


4,451,979

ASSEMBLY AND DISASSEMBLY APPARATUS FOR USE WITH A ROTARY MACHINE

Carl J. Schuster, Greensburg, Pa., assignor to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Filed Oct. 27, 1980, Ser. No. 200,807
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—824 **6 Claims**



1. Assembly and disassembly apparatus for use with a rotary machine having a machine frame, an impeller rotor axially extending along the machine frame, and a fluid casing annularly extending around the rotor and the machine frame which defines a casing opening annularly extending across the machine frame and above the impeller rotor, the assembly and disassembly apparatus comprising:
a rotor stand having a base adapted to be positioned adjacent to the rotary machine for supporting the impeller rotor in a disassembled position;
a pair of spaced parallel rails supported by the rotor stand

and extending longitudinally along the base of the stand and cantilevered away from the base thereof, said cantilevered rails being adapted to extend through the fluid casing opening and into the fluid casing in substantially parallel relation to the rotor axis, and to be secured to the machine frame for guiding movement of the impeller rotor between the machine frame and the rotor stand;

a disc end cradle for supporting the disc end of the impeller rotor, the disc end cradle being movably mounted on said rails for movement in an axial direction therealong;

a coupling end cradle spaced from the disc end cradle, for supporting the coupling end of the impeller rotor, the coupling end cradle being movably mounted on said rails for movement in an axial direction therealong independently of the disc end cradle;

a disc end fixture including means for raising and lowering the disc end of the impeller rotor into and out of the rotor assembled position and onto and off of the disc end cradle;

a coupling end fixture including means for raising and lowering the coupling end of the impeller rotor into and out of the rotor assembled position and onto and off of the coupling end cradle; and

bearing means disposed between the disc and coupling end cradles and said rails for facilitating axial movement of said disc and rotor cradle means along the rails with the impeller rotor positioned thereon to move the rotor outwardly from the fluid casing of said machine onto the rotor stand.

4,451,980

CHARGEABLE ELECTRIC INSTRUMENT

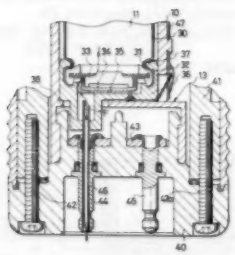
Kenzo Shirakawa; Norio Yamada, both of Hikone; Masami Kitamura, Shiga; Shinsaku Yasunaka, and Masao Matsumoto, both of Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 2, 1982, Ser. No. 414,055

Claims priority, application Japan, Nov. 20, 1981, 56-187436; Mar. 10, 1982, 57-37799

Int. Cl.³ B26B *19/38*

U.S. Cl. 30—41 **10 Claims**



1. A chargeable electric instrument comprising:

a housing,

a battery casing disposed in said housing and having a closed end and an open end,

a chargeable storage battery disposed in said casing,

electric component parts powered by said battery,

means for feeding an electric charging current to said battery,

a valve arranged to clos-off said open end of said casing in a liquid-tight manner, said valve including a normally-closed gas-discharge opening means for discharging, from said casing, gas generated therein by said battery, said opening means being openable in response to a predetermined gas pressure within said casing to discharge the gas, and

gas conducting means for communicating said opening means with the exterior of said housing to discharge the gas to the exterior of said housing,

said gas conducting means including diffusion preventing means encompassing said valve and said open end of said casing to prevent gas from collecting between said housing and the exterior of said casing.

4,451,981

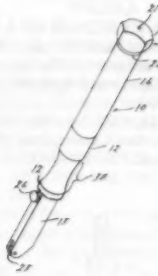
GLASS CUTTER

Alan Kaniarz, Detroit, Mich., assignor to Inland Craft Products Co., Madison Heights, Mich.

Filed Sep. 30, 1982, Ser. No. 432,068

Int. Cl.³ C03B *33/12*

U.S. Cl. 30—123.3 **11 Claims**



1. A glass cutter which comprises:

an end cap having a vent hole;

a sleeve, serving as a cutting oil reservoir and having an upper end covered by the end cap, and a lower end;

a barrel, having a hollow passing coaxially therethrough, an upper portion rigidly and sealingly connected with the lower end of the sleeve, and a lower portion provided with a coaxial bore and a pair of opposed slots transversely and partially intersecting the bore;

a tube having an upper and lower portion, the upper portion being rigidly and coaxially disposed within the hollow of the barrel;

a tubular cutter head having a hollow, an upper portion and lower portion, the hollow coaxially and slidably engaging the lower portion of the tube, and the upper portion slidably engaged in the slots of the barrel to prevent relative rotation between the cutter head and barrel and to limit inward movement of the cutter head;

a cutting blade rotatably mounted on the lower portion of the cutter head;

a wick fitting closely in the tube having a lower end which projects slightly from the lower portion of the tube and which is in fluid communication with the cutting blade when the glass cutter is operated, and which is spaced apart from the cutting blade when the glass cutter is unused; and

a spring disposed about the tube within the bore of the barrel and in contact with the upper portion of the cutter head, pushing the cutter head away from the barrel to interrupt fluid communication between cutting blade and the lower end of the wick when the glass cutter is unused.

4,451,982

BOLT ACTION KNIFE

Walter W. Collins, 802 Bellwood St., Clover, S.C. 29710

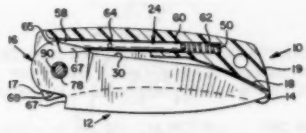
Filed Jul. 27, 1981, Ser. No. 286,888

Int. Cl.³ B26B *1/04*

U.S. Cl. 30—161 **2 Claims**

1. A bolt action folding knife having a blade with a sharpened edge and a shank having one edge extending rearwardly from the sharpened edge of the blade, a handle having an

elongated slot for the reception of the sharpened edge of the blade, said shank being pivotally connected to one end of the handle, a bolt slidably mounted to said handle for movement toward and away from the shank, spring means normally urging said bolt into engagement with the shank of the blade to lock the blade in extended position exteriorly of the handle, a camming portion on said one edge of the shank, and said spring



means urging the bolt into engagement with the camming portion when the sharpened edge of the blade is closed within the handle, whereby the bolt normally retains the blade in closed position but the camming surface moves the bolt rearwardly with sufficient pressure to overcome the spring means and permits the blade to be pivoted outwardly toward its extended position exteriorly of the handle when the blade is grasped and pulled out of the slot.

4,451,983

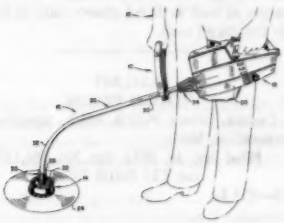
PLASTIC FLEXIBLE SHAFT SUPPORT

Jack E. Johnson, Shreveport; Ronald C. Loyd, Keithville, and William Fodness, Shreveport, all of La., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 095,575, Nov. 19, 1979, abandoned. This application May 3, 1982, Ser. No. 374,248

Int. Cl.³ A01D *35/26;* **F16C** *1/00*

U.S. Cl. 30—276 **4 Claims**



1. A power tool comprising:

a prime mover having a power output shaft;

a head including a rotary member;

an elongated, thin walled metal tubular support housing coupled to one end to said prime mover housing and coupled on the opposite end to said head, said tubular support housing having substantially straight end sections inclined with respect to each other and an intermediate section forming a curved transition from one straight end section to the other;

a flexible drive shaft extending through said straight end sections and said intermediate section;

a continuous length of tubular nonmetallic bearing liner extending through substantially the entire length of said tubular support housing and disposed in surrounding relationship to and directly engageable with said flexible drive shaft and forming a sole continuous bearing for said flexible drive shaft;

drive connector means coupling said flexible drive shaft on opposite ends to said power output shaft and said head, respectively, in torque transmitting relationship thereto, said drive connector means comprising coupling means having opposite ends engaged with one end of said flexible drive shaft and with said rotary member in torque transmitting relation, respectively; and

said coupling means and said flexible drive shaft having mutually engageable coupling socket and a first drive head, respectively, said first drive head being formed on said one end of said flexible drive shaft and being axially movable in said coupling shaft, and said coupling socket and said first drive head having overlapping torque transmitting surfaces to provide for a predetermined range of axial movement of said first drive head relative to said coupling socket, and said drive connector means further comprising a drive socket member coupled to said power output shaft and to the opposite end of said flexible drive shaft, said opposite end of said flexible drive shaft including a second drive head axially movable in said drive socket member, said drive socket member and said second drive head having overlapping torque transmitting surfaces to provide for a predetermined range of axial movement of said second drive head relative to said drive socket member whereby said flexible drive shaft is movable axially over a limited range in said continuous bearing without restriction between said coupling socket and said drive socket member in response to torque variations in said flexible drive shaft.

4,451,984

INNER BLADE FOR USE IN RECIPROCATING TYPE ELECTRIC SHAVER

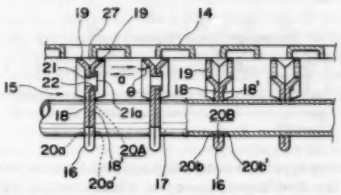
Hiroshi Shimazu, Fukuoka, Japan, assignor to Kyushu Hitachi Maxell, Ltd., Fukuoka, Japan

Filed Sep. 14, 1982, Ser. No. 417,841

Claims priority, application Japan, Jan. 29, 1982, 57-14023

Int. Cl.³ B26B *19/00, 19/02;* **B23B** *17/00*

U.S. Cl. 30—346.52 **9 Claims**



1. A inner blade (15) for use in a reciprocating type electric shaver, including at least two support members (17) and a plurality of inner blade elements (16) mounted, in parallel with each other and at a predetermined interval therebetween in reciprocating directions of said inner blade (15), on said at least two support members (17), the improvement comprising:

said inner blade element (16) having a pair of a first blade tip portion (19) and a second blade tip portion (19'), which is formed by folding, a blank (24) having a profile symmetrical with respect to a line (L), along said line (L) into a pair of a first inner blade element portion (18) and a second inner blade element portion (18') so as to have a U-shaped cross section along said line (L) at one end of said inner blade element (16) such that said first inner blade element portion (18) is brought into close contact with said second inner blade element portion (18');

said pair of said first blade tip portion (19) and said second blade tip portion (19') which are, respectively, provided at one end of said first inner blade element portion (18) remote from said one end of said inner blade element (16) and at one end of said second inner blade element portion (18') remote from said one end of said inner blade element (16) and are, respectively, formed by bending said one end of said first inner blade element portion (18) and said one end of said second inner blade element portion (18') outwardly in opposite directions remote from each other so

as to constitute a rake angle (θ) at each of said first blade tip portion (19) and said second blade tip portion (19') such that said inner blade element (16) has a Y-shaped cross section at the other end thereof with a V-shaped space (27) enclosed by said first blade tip portion (19) and said second blade tip portion (19') being formed at said other end of said inner blade element (16), whereby said pair of said first blade tip portion (19) and said second blade tip portion (19') are brought into sliding contact with an inner surface of a fixed outer blade (14) of said reciprocating type electric shaver; and

said pair of said first inner blade element portion (18) and said second inner blade element portion (18') which have, respectively, at least two first coupling holes (20a, 20b) and at least two second coupling holes (20a', 20b') provided at positions corresponding to those of the respective at least two first coupling holes (20a, 20b) so as to form at least two coupling holes (20A, 20B) on said inner blade element (16) such that said at least two support members (17) are inserted through the at least two coupling holes (20A, 20B) of each of the plurality of said inner blade elements (16), respectively.

4,451,985

DRAWING APPARATUS

Burke C. Pullman, 31, Gledhow Gardens, London, SW. 5, England

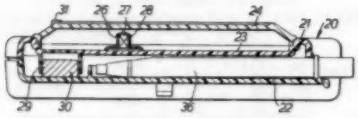
PCT No. PCT/GB81/00063, 371 Date Nov. 20, 1981, 102(e) Date Nov. 20, 1981, PCT Pub. No. WO81/02842, PCT Pub. Date Oct. 15, 1981

PCT Filed Apr. 8, 1981, Ser. No. 325,439

Claims priority, application United Kingdom, Apr. 9, 1980, 8011728

Int. Cl.³ B43L *13/00*

U.S. Cl. 33—18 R **7 Claims**



1. Drawing apparatus comprising a closed chamber one wall of which is a translucent screen and which contains liquid or powder of non-magnetic material that will adhere as a coating to the screen even when the interior surface thereof is downwardly facing, a scriber within the chamber having a base for cooperating with the chamber wall opposite said screen and a stylus upstanding therefrom for cooperating with the screen, the base having a span which prevents significant tilting of the scriber and the height of the scriber being such that, with the base resting on said opposite wall, the tip of the stylus is marginally clear of the screen, and a pen-like movable guide member external to the chamber, the scriber and guide member having a mutual magnetic attraction, whereby movement of the guide member over the screen raises the stylus into contact with the underside thereof and causes the stylus to scribe an externally visible line corresponding to said movement.

4,451,986

ULLAGE TAPE WINDER

John P. Jones, Jr., Greenwich, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,702

Int. Cl.³ G01F *23/04*

U.S. Cl. 33—126.5 **12 Claims**

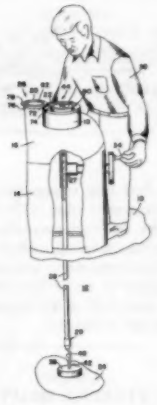
1. A gauge for directly measuring the ullage of a cargo tank located below the deck of a vessel, said gauge comprising:

a sealed chamber positioned on said deck and communicating with the interior of said cargo tank,

a winder reel positioned within said sealed chamber, said winder reel being manually rotatable by a reel handle extending to the exterior of said sealed chamber,

a calibrated ullage tape wound about the surface of said winder reel,

means connected to a reel shaft interposed between said winder reel and said handle for applying a torque to said reel shaft, and



a float attached to said ullage tape of sufficient size and weight, such that contact of said float with the surface of the cargo is felt by the operator through the winder reel handle,

said sealed chamber including a view window for permitting direct observation of the calibrated surface of said ullage tape to measure ullage when said float is on the surface of the cargo, as well as direct observation of the cargo level within the cargo tank.

4,451,987

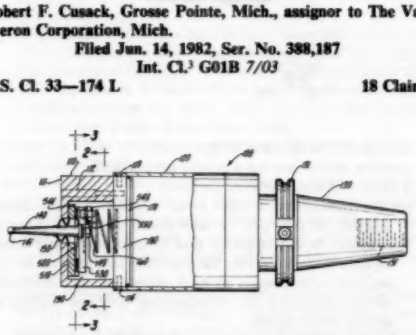
TOUCH PROBE

Robert F. Cusack, Grosse Pointe, Mich., assignor to The Valeron Corporation, Mich.

Filed Jun. 14, 1982, Ser. No. 388,187

Int. Cl.³ G01B *7/03*

U.S. Cl. 33—174 L **18 Claims**



18. In a contact detection system, mechanical repositioning apparatus for returning relative moving first and second members to a rest position in the absence of contact force acting on one of the first and second members, the mechanical repositioning apparatus comprising:

at least three contact means positioned between the first and second members and shaped to define stable contact between the first and second members in the rest position; and

a substantially planar resilient locating member positioned between the first and second members, the locating mem-

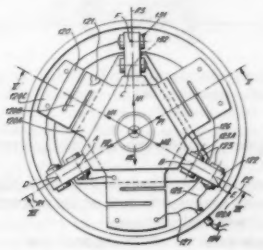
ber coupled at one side thereof to the first member only at a single portion of the first member between two of the at least three contact means and at another side thereof to the second member adjacent a third contact means remote from said two contact means in a manner such that the first and second members are accurtely urged toward the rest position defined by the contact means in the absence of said contact force.

4,451,988

PROBE FOR USE IN MEASURING APPARATUS

David R. McMurtry, Gloucestershire, England, assignor to Rolls Royce Ltd. and Renishaw Electrical Ltd., Bristol, England

Continuation of Ser. No. 414,502, Sep. 2, 1982, Pat. No. 4,397,093, which is a continuation of Ser. No. 267,068, May 26, 1981, Pat. No. 4,360,973, which is a continuation of Ser. No. 39,786, May 17, 1979, Pat. No. 4,288,925, which is a continuation of Ser. No. 864,151, Dec. 23, 1977, abandoned, which is a continuation of Ser. No. 858,024, Dec. 6, 1977, abandoned. This application Jun. 27, 1983, Ser. No. 508,199
Claims priority, application United Kingdom, Dec. 24, 1976, 54032/76
Int. Cl.³ G01B *7/28*
U.S. Cl. 33—174 L **9 Claims**



1. A device for mounting a stylus in position-determining apparatus wherein said device and an object are movable relative to each other for engaging the stylus with the object and by such engagement sense the position thereof, said device comprising:

a fixed member having an axis,

a movable member to which a stylus is connectable,

first surface means provided on said fixed member and arranged around said axis in a plane transverse thereto,

second surface means provided on said movable member and confronting said first surface means,

bias means for urging said movable member into engagement with said fixed member at said first and second surface means thereby to locate said movable member on said fixed member in an axial rest position thereon,

a centering member connected between said fixed and said movable member,

said centering member being at least one structure extending in two dimensions transversely to said axis when said movable member is at said rest position,

said structure being rigid against deformation in said two dimensions but being otherwise flexible and said centering member thereby cooperating to prevent displacement of said stylus relative to said fixed member rotationally about said axis and translationally in any direction transverse to said axis when said movable member is at said rest position but to permit displacement of said movable member from said rest position translationally in the direction of said axis and angularly in any plane through said axis when a force is applied to said movable member,

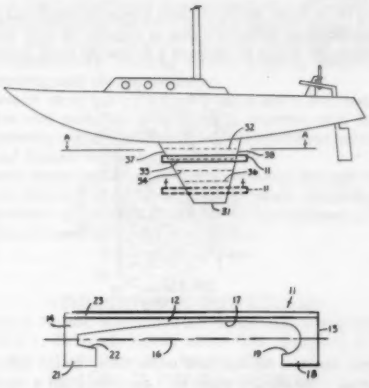
and said bias means cooperating to return said movable member to said rest position when said force ceases.

4,451,989

BOAT KEEL TOOL

Lawrence F. Leistiko, 10210 Queen Ave. S., Bloomington, Minn. 55431

Filed Apr. 14, 1983, Ser. No. 485,236
Int. Cl.³ G01C *15/00*
U.S. Cl. 33—286 **3 Claims**



1. A tool for checking the alignment and shape of a boat keel lead edge, a trailing end and a flat planar, said tool having a body longer than the maximum distance between the leading and trailing edge of a boat keel and wider than the maximum thickness of such keel, said body having an elongated curved surface extending the length of the body from the lead end to the trailing end along the longitudinal axis of the tool, said elongated curved surface duplicating the curved shape of one side of a boat keel from the leading to the trailing edge of the keel, a lead extension on said body at the lead end corresponding with the lead edge of a boat keel and forming a symmetrical curved surface with the lead end of said elongated curve to duplicate the lead edge of a boat keel, a trailing extension on said body at the trailing end corresponding to the trailing edge of a boat keel and forming a symmetrical curved surface with the trailing end of said elongated curve to duplicate the trailing edge of a boat keel, and a flange connected to said body and extending from the lead end to the trailing end of said body and parallel to the longitudinal axis of said body, said flange functioning as a sight adapted to check the alignment of a boat keel with the center line of a boat with simultaneous application of the elongated curved surface to the surface of the keel to check the accuracy of the curve of the keel.

4,451,990

GYROCOMPASS

Takeshi Hojo, Kuroiso, Japan, assignor to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Filed Apr. 12, 1982, Ser. No. 367,465
Claims priority, application Japan, Apr. 15, 1981, 56-56797
Int. Cl.³ G01C *19/38*
U.S. Cl. 33—327 **1 Claim**

1. A gyrocompass comprising:

a gyro case for housing a gyro, a spin axis of which is arranged substantially horizontal;

a container means for surrounding said gyro case and containing within it a liquid;

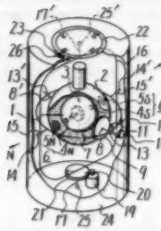
a first supporting means formed of a suspension wire for supporting said gyro case within said container means;

a second supporting means for supporting said container means with three degrees of freedom;

a vertical follow-up means for making said container means follow said gyro case around a vertical axis;

means for detecting a displacement of said gyro case to north and south directions relative to said container means and supplying a detected signal, supplying the detected signal to said vertical follow-up means to thereby produce a follow-up error responsive to said displacement, and twisting said suspension wire in accordance with said follow-up error so that a damping torque is applied to said gyro case;

a first order delay means through which the north and south displacement detected signal is supplied to said vertical follow-up means to produce a follow-up error therein, a



time constant of said first order delay means being selected substantially equal to a ratio between a viscosity torque constant around the vertical axes of said container means and said gyro case and a torque spring constant of said suspension wire;

said first order delay means comprising an operational amplifier, and input resistance, and a feedback circuit; and

said feedback circuit being formed of a resistance and a capacitance connected in parallel, said feedback circuit being connected between the output terminal of said operational amplifier and an inverted input terminal thereof.

4,451,991

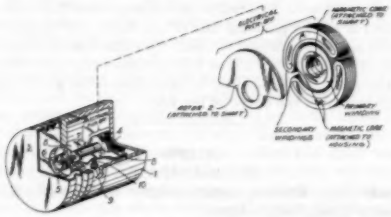
VERTICAL INDICATING METHOD AND DEVICE

Yishav Netzer, 5 Kenmar Dr. #18, Billerica, Mass. 01821

Filed Jun. 22, 1981, Ser. No. 275,602

Int. Cl.³ G01C 9/08

U.S. Cl. 33—396 **12 Claims**



1. A generally small compact pendulous verticality sensor of the type having pendulous element means pivoted about at least one axis, comprising: a housing containing a rotor assembly including said pivoted pendulous element means immersed in a liquid having a relatively low viscosity; said pendulous element means further including a shaft supported by bearing means at its opposite ends, and said shaft having generally flat, outwardly extending vane-like coupling means coupling said pendulous element means to said liquid, said coupling means being for substantially increasing the moment of inertia of said shaft without increasing the loading on said bearing means,

adjustable bob means for aligning said pendulous element with the vertical and for adjusting the effective length of said pendulous element means and the pendularity of said rotor assembly,

and said sensor further including angular electrical pick-off means on said shaft for providing an electrical signal proprtional to the angular tilt of said rotor assembly relative to said housing.

4,451,992

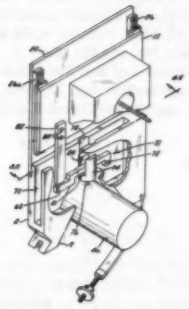
METHOD AND APPARATUS FOR POSITIONING A SHAFT ALIGNING SENSING STRUCTURE ON A SHAFT

Stephen P. Maluk, Milwaukee, Wis., assignor to Spring - Morrne, Inc., Milwaukee, Wis.

Filed Sep. 30, 1982, Ser. No. 430,332

Int. Cl.³ G01B 5/24

U.S. Cl. 33—412 **26 Claims**



1. Shaft alignment positioning apparatus, comprising:

a support;

first means mounted on the support for slideably mounting a shaft aligning sensing structure on the support from a first position to a second position;

sensing means mounted on the support; and

contact means mounted on the shaft aligning sensing structure responsive to the sensing means,

whereby the sensing means causes the contact means to position the shaft aligning sensing structure from the first position to the second position.

4,451,993

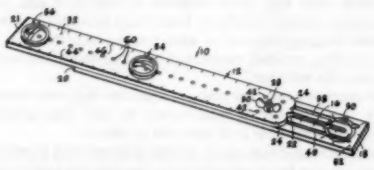
SLIDING RULE AND PROTRACTOR

Alvin R. Yauk, P.O. Box 43, Gate, Okla. 73844

Filed Jul. 5, 1983, Ser. No. 511,071

Int. Cl.³ B43L 7/06

U.S. Cl. 33—472 **2 Claims**



1. A measuring tool, comprising;

an elongated right rectangular planar base member having an upper surface and having a central longitudinally extending slot terminating adjacent its respective ends;

an elongated top member of equal length and width with respect to said base member and having an aperture adjacent one end vertically aligned with the base member slot;

screw means pivotally securing the top member on the base member,

said base member having at least one longitudinal groove between its slot and one longitudinal marginal edge open toward said top member; and,

at least one pin depending from said top member and slidably received by the groove for maintaining said members longitudinally aligned during longitudinal movement of one member relative to the other member,

one end portion of said base member having a circular groove open toward said top member formed on a radius at least equal to the spacing between the longitudinal groove and the slot and intersecting the longitudinal groove for sliding movement of said pin through the circular groove during pivoting movement of said top member relative to said base member.

4,451,994

RESILIENT MIDSOLE COMPONENT FOR FOOTWEAR

Donald M. Fowler, 271 Rock Ave., Golden, Colo. 80401

Filed May 26, 1982, Ser. No. 382,178

Int. Cl.³ A43B *13/18*

U.S. Cl. 36—28 **15 Claims**

1. In a shoe, an impact-absorbing midsole member comprising spaced flexible closure layers including outer peripheral edges substantially coextensive with one another, a diaphragm extending intermediately between said spaced closure layers, an outer peripheral closure strip extending along said outer peripheral edges of said spaced closure layers to form a sealed air space between said closure layers, said sealed air space divided by said diaphragm into separate upper and lower air spaces, and a plurality of spaced, parallel support ribs extending through said upper and lower air spaces integral with said diaphragm and spaced closure layers, said closure strip having ridges interfitting with complementary grooves formed at opposite ends of said support ribs between said closure layers and said diaphragm.

4,451,995

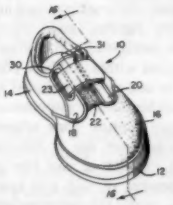
ADJUSTABLE AND FLEXIBLE CLOSURE ASSEMBLY FOR SHOES WITH ELASTICIZED LOWER VAMP OPENING

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Continuation-in-part of Ser. No. 21,008, Mar. 16, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,895

Int. Cl.³ A43B *11/00, 23/26*

U.S. Cl. 36—51 **29 Claims**



1. In a shoe having a sole, tongue and uppers, including a vamp and quarters and a vamp opening in said shoe, said vamp opening having an upper portion and a lower portion, said lower portion of said opening including elasticized material connecting said quarters and spanning said opening and overlying said tongue, said upper portion of said opening including an adjustable and flexible closure assembly connecting said quarters and spanning said opening and overlying said tongue, said closure assembly located adjacent and substantially above said elasticized material connecting said quarters, said tongue providing a first layer between said quarters, said elasticized material and said closure assembly providing a second layer between said quarters, said closure assembly comprising:

a flexible, multi-adjustable, separable fastener means having first and second fastening members including arrays of complementary, coacting flexible gripping elements for securing said closure assembly;

a fastener strap having a fixed portion and a free end, said free end including said fastening member, said second fastening member positioned adjacent said fixed portion of said fastener strap; and

anchor means including an anchor opening through which said free end of said fastener strap passes permitting adjustment to maintain a precise desired tautness of said closure assembly to fasten said shoe.

4,451,996

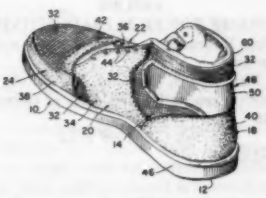
ATHLETIC SHOE WITH COLLAR

Edward J. Norton, Kingston; Paul Oparowski, Derry, and Alphonse L. Belavitch, Salem, all of N.H., assignors to New Balance Athletic Shoe, Inc., Boston, Mass.

Filed Mar. 22, 1982, Ser. No. 360,663

Int. Cl.³ A43B *5/00, 19/00*

U.S. Cl. 36—129 **9 Claims**



1. Footwear in the form of an athletic shoe including a sole assembly and an upper connected to said sole assembly, said upper having a pair of instep sections and quarter sections which extend over the foot above the region of the ankle, said athletic shoe characterized by a cut out area completely through the material of said quarter sections extending around the heel of the foot, over the Achilles tendon, toward and around the ankle bone on each side of the foot, and a closure for said cut out area, said closure comprising a collar of cushioning material which embraces, supports and protects the ankle bone as well as to provide a measure of pliability greater than that of the material within the surrounding portions of said upper to substantially eliminate any potential pressure points within said cut out area.

4,451,997

STRETCHER FRAME FOR HOLDING FABRIC

Bruna Jones, 416 Cornell Pl., Ventura, Calif. 93003

Filed Mar. 30, 1981, Ser. No. 248,678

Int. Cl.³ D05C *1/02;* **D06C** *3/08*

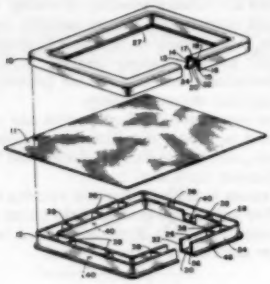
U.S. Cl. 38—102.2 **5 Claims**

1. A stretcher frame and a fabric held in a plane therein comprising:

(a) a first frame member including an outer polygonal U-channel portion forming a continuous channel and having U-legs at right angles to said plane and the U-legs having tips; and

(b) a second frame member including an inner polygonal U-shaped portion having legs at right angles to said plane with the legs of the U-shape directed toward the legs of

the U-shape of the first frame member and mated within the U-shape of the first frame member, characterized by one U-leg of the outer frame member having a rim projecting toward the other leg of the U-shape, the rim engaging the inner U-shape to lock the frame members in mated relationship, and the inner frame member having an



outwardly extending flange to contact one tip of one leg of the outer U-channel to limit the inward movement of the inner frame member and to also engage said fabric in the stretcher frame, whereby said fabric is sandwiched between said inner and outer U-portions when they are mated together.

4,451,998

FRAME FOR FILM DIAPOSITIVES

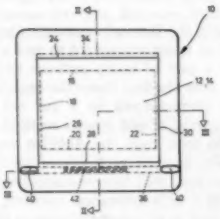
Hans-J. Philipp, Eichenstrasse 15/17, D-8900 Augsburg 21, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 367,057

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1981, 3114616

Int. Cl.³ G09F *1/12*

U.S. Cl. 40—152 **10 Claims**



1. A frame for film diapositives held between two transparent or translucent covers which are not fixedly mounted in the frame, the frame being provided with an rectangular aperture each at its front and rear side therethrough, the aperture being smaller in size than the covers, and means being provided for securely positioning the covers, characterized in that the frame consists of one single part, that a distance between two opposite parallel edges of at least one of the aperture is equal to or slightly larger than the width of the covers, that a groove each of U-form cross-section extends in parallel to the other two opposite edges of the aperture within the frame, the distance between the bottoms of the two grooves being larger than the height of the covers with one of the two grooves being deeper than the other and that said means for positioning comprises a separate fixing member in the proximity of the deeper groove pressing against an edge of at least one of the covers securely positioning the covers in the frame and with their upper and lower edges within both of the grooves, and the deeper groove extends at least in one direction to at least one opening provided at the frame surface, said at least one opening being sized to receive said separate fixing member.

4,451,999

ANIMAL IDENTIFICATION DEVICE

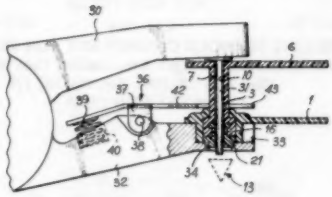
Georges Yvorra, 9, rue du Baigneur, Paris, France (75018)

Continuation of Ser. No. 926,394, Jul. 20, 1978, abandoned. This application Jul. 31, 1981, Ser. No. 288,732

Claims priority, application France, Feb. 27, 1978, 78 05481

Int. Cl.³ G09F *3/00*

U.S. Cl. 40—301 **2 Claims**



1. A non-reusable improved identification device for animals which comprises:

a first part comprising

a first plate made of flexible and elastic material and a sleeve connected to said first plate and extending therefrom, said sleeve having a passage therein, said first plate having an insertion opening communicating with said passage and having a diameter smaller than the cross-section of said passage to thereby define a first shoulder in the area of communication thus formed;

a second part comprising

(a) a second plate made of flexible and elastic material, integral with a cylindrical tubular post, said cylindrical post comprising adjacent to its outer end an enlarged portion having a cross-section corresponding to that of the passage of the abovesaid sleeve, said enlarged portion being connected to said post by a second shoulder suitable for interlocking engagement with said first shoulder within said passage, said cylindrical post and enlarged portion further comprising an axial post passage extending therethrough;

(b) a member of hard material comprising:

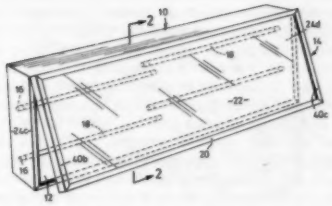
a non removable base portion attached to the enlarged portion of said tubular post whose cross section does not exceed that of said enlarged portion,

a conical portion comprising a pointed end extending from said base portion,

a weakened rupture zone within said conical portion in a plane intermediate the end point of said conical portion and said base portion, thereby providing a frustconical portion between said rupture zone and said base portion, said weakened rupture zone comprising an unfilled groove on the surface of said conical portion,

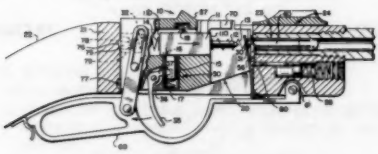
and a passage recess within said base portion, in line with the axial passage in said cylindrical post and enlarged portion, and ending within said frustoconical portion at an end adjacent to said rupture zone whereby, when said first part and second part are in interlocking engagement, insertion of a rod within said post passage and passage recess and pressure of said rod against the end of said passage recess, while the outer surface of said frustoconical portion is in abutment against another surface, results in the rupture of said weakened zone and the detachment of the part of said conical portion, including said pointed end, beyond said rupture zone, from the base portion attached to the enlarged portion of said tubular post.

4,452,000
ILLUMINATABLE SIGN
James Gandy, Mississauga, Canada, assignor to Signtech Inc., Mississauga, Canada
Filed Jun. 30, 1981, Ser. No. 279,179
Int. Cl.³ G09F *13/04*
U.S. Cl. 40—574 **6 Claims**



1. A sign comprising a rigid peripheral frame extending around an opening lying in a plane, a sheet of flexible sign material extending across the opening, said frame having an edge surrounding the opening, the flexible sign sheet having a peripheral edge portion extending rearwardly from the plane of the opening at the frame edge, and a series of separate sheet tensioning devices spaced around the frame rearwardly of the plane of the opening for tensioning the flexible sign sheet across the opening, each tensioning device comprising means for retaining the peripheral edge portion of the flexible sign sheet and an adjustable bolt having a head and threaded shank extending therefrom, said head abutting the retaining means and said shank extending through an aperture in the retaining means in a direction extending rearwardly of the plane of the opening into threaded engagement with the frame to enable the bolt head to be rotated to screw the shank into further threaded engagement with the frame with consequent rearward movement of the retaining means independently of the retaining means of the other sheet tensioning devices, while the retaining means is holding the edge portion of the flexible sign sheet, to cause the peripheral edge portion of the flexible sign sheet to be pulled rearwardly across the front edge thereby tensioning the flexible sign sheet across the opening.

4,452,001
FIRING PIN MECHANISM
Robert Compton, Box 3492, San Angelo, Tex. 76901
Filed Apr. 9, 1981, Ser. No. 252,446
Int. Cl.³ F41C *11/04*
U.S. Cl. 42—23 **7 Claims**



1. A mechanism within a firearm having a falling breechblock action, said breechblock being disposed for vertical reciprocation within a slot defined by the breech housing which is set between a chamber and a rear stock, said chamber being of a configuration to receive a cartridge having a percussion sensitive primer, said mechanism comprising:
an elongated horizontal track within said breechblock;
a back wall of said breechblock closing one end of said elongated horizontal track;
a chamber fore wall of said breechblock opposite said back wall and substantially closing the other end of the elongated horizontal track;
a momentum drivable pin block disposed in said track, said pin block having a chamber end and a back end;
a firing pin extending from the chamber end of said pin block;
an aperture through said chamber fore wall of said breechblock through which said firing pin is extendable into said chamber for striking said primer;
a counter spring disposed in said track between said pin block and said chamber fore wall of said breechblock whereby said firing pin is biased away from the immediate area of said chamber;
a main spring set between the back end of said pin block and the back wall of said elongated horizontal track whereby said main spring, when cocked, exerts a force on said pin block urging it toward the chamber;
a trigger assembly mounted on said breechblock whereby said pin block is first held in a cocked position against the force of said main spring, then released at a selected time to fire the cartridge, being driven first by said main spring and carried through to firing pin-primer impact by the momentum of said travelling pin block;
means for ejecting cartridge after firing, said means comprising:
an ejector plate disposed for seating flush against the chamber, set between the chamber and the chamber fore wall of said breechblock when said breechblock is in a raised position;
said ejector plate being engagable with the rim of a chambered cartridge;
an elongated ejector stem having a plate end to which said ejector plate is connected and a plunger end opposite said plate end, said ejector stem providing a means whereby said ejector plate is horizontally and telescopically extendable away from said chamber; and
an ejector spring engaging said ejector stem at its plunger end whereby said ejector stem and attached ejector plate are urged toward an extended position;
whereby, when said breechlock is lowered and the chamber fore wall drops from horizontal alignment with said ejector plate, said ejector plate springs rearward and pulls the cartridge from the chamber after firing;
means for cocking said pin block, said means comprising:
a pin block arm extension of said pin block; and
said ejector plate being disposed to engage said pin block arm upon ejecting a cartridge after firing from said chamber and to drive said pin block to its cocked position;
whereby said pin block is driven rearward, against the force of the main spring, by the force of the ejector spring and once pushed back, the trigger assembly engages said pin block to releasably secure the cocked position; means for returning said ejector plate to its seated position; and
means to lower and raise said breechblock.

4,452,002
MAGAZINE FILLING GUIDE
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818
Filed Jul. 19, 1982, Ser. No. 399,684
Int. Cl.³ F42B *39/06*
U.S. Cl. 42—87 **6 Claims**

1. A magazine filling guide of unitary construction comprising: a base adapted for engagement with a casing of a magazine

in a predetermined fixed relationship therewith; and guide means fixed on said base, said guide means including seat

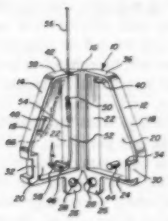
means positionally adapted for aligning a cartridge with a front exit port on said casing.

4,452,003

STORAGE CASE FOR FISHHOOKS

Wayne A. Deutsch, 1305 8th Ave., SE., Dyersville, Iowa 52040; James D. Schroeder, 1335 S. Grandview, Dubuque, Iowa 52001, and Greg J. Hammel, Lost Canyon Park, Peosta, Iowa 52068

Filed Feb. 3, 1982, Ser. No. 345,614
Int. Cl.³ A01K *97/06*
U.S. Cl. 43—25.2 **5 Claims**



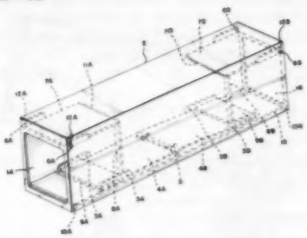
5. A container and anchor for a fish line attached hook, said container defining a pair of elongated side-by-side generally mirror image housing halves joined together along adjacent marginal edges for swinging between open positions opening in substantially the same direction and closed positions opening into each other and with each housing half comprising a closure for the other housing half, anchor means carried within one end of one of said housing halves for engagement by the hooked end of a fishhook with the shank of the fishhook projecting toward a marginal edge of the other end of said one housing half, said marginal edge including a fish line receiving notch formed therein opening outwardly in the same direction in which said one housing half opens, coacting latch means carried by the marginal portions of said housing halves remote from the hinge connection therebetween for releasably retaining said housing halves in the closed position, said one end of said housing halves each including endwise outwardly projecting tabs which are registered with each other when said housing halves are in the closed position and which include laterally opening keyhole-shaped recesses formed therein adapted to receive a marginal portion of a fishing rod line eye therein.

4,452,004

ANIMAL TRAP

Masatoshi Matsuura, 1382-88, Shikiji-Cho, Ono-Shi, Hyogo-ken, Japan

Filed Jul. 21, 1982, Ser. No. 400,465
Claims priority, application Japan, Mar. 25, 1982, 57-42882[U]
Int. Cl.³ A01M *23/18*
U.S. Cl. 43—61 **3 Claims**



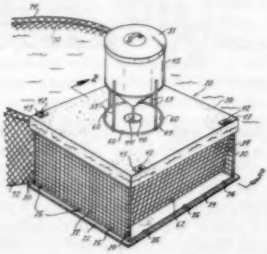
1. An animal trap comprising:
a main box having entrances at each end thereof;
a pair of vertically elongated holes provided on opposing sides of each said entrances of said main box;
two or more doors coupled to supporting axles disposed respectively in said elongated holes adjacent said entrances;
a pair of step boards coupled to supporting axles installed in pairs respectively near a bottom plate of said main box, each of said boards being weighted to tilt down towards said entrance to engage with the other step board at their inside edges;
a groove for inserting only a lower edge of each door thereinto provided in said bottom plate of said main box along the lower side of each of said entrances; and
anchoring members vertically coupled to said step boards so as to anchor said door to keep the door open;
whereby said animal trap is arranged such that when said step boards are pressed down at the portions inside of said said supporting axles due to the weight of an animal, the anchorage of the door with anchoring member is released causing the doors to rotate downwardly and snap into said grooves to thereby snap shut said doors to close said entrances.

4,452,005

SYSTEM FOR ENTICING, ENCLOSING AND HOLDING FISH

Eugene M. Poirot, Golden City, Mo. 64748

Filed Apr. 29, 1982, Ser. No. 372,973
Int. Cl.³ A01K *69/00*
U.S. Cl. 43—100 **16 Claims**



1. A system for enticing, trapping and holding fish which

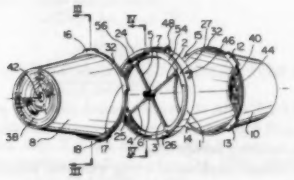
comprises space-defining means to define a space into which fish can be enticed, said space-defining means having an inlet through which fish can enter said space, escape-preventing means disposable in a predetermined position to permit fish to enter said space via said inlet and disposable in a further predetermined position to prevent the escape of fish of a given size from said space via said inlet, feed-holding means which can hold a replenishable feed in said space and thereby entice fish into said space, said escape-preventing means automatically moving from said predetermined position to said further predetermined position to prevent the escape of fish from said space via said inlet whenever fish have eaten said replenishable feed held by said feed-holding means, said space-defining means having an exit from said space, a "live net" in communication with said exit from said space to receive fish that leave said space via said exit and to thereafter hold said fish, and a readily-movable "exit only" closure for said exit which normally occupies a blocking position adjacent said exit wherein it blocks said exit, said readily-movable "exit only" closure being movable away from said blocking position by fish of said given size attempting to escape from said space-defining means and thereby permitting said fish to pass through said exit from said space into said "live net", said "exit only" closure thereafter automatically returning to said blocking position to keep fish, which are of said given size and which have passed through said exit and which are within said "live net", from passing back through said exit into said space, whereby said escape-preventing means and said readily-movable "exit only" closure coact with said space-defining means to promote irreversible, progressive movement of fish into and through said space into said "live net", and whereby said readily-movable "exit only" closure coacts with said "live net" to permit replenished amounts of feed to entice successive groups of fish into said space-defining means so said space-defining means can trap said successive groups of fish and said "live net" can thereafter hold said successive groups of fish.

4,452,006

INSECT TRAP

Warren F. Steck; Edward W. Underhill; Melvin D. Chisholm, and Berton K. Bailey, all of Saskatoon, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Sep. 30, 1982, Ser. No. 430,834
Claims priority, application Canada, Dec. 14, 1981, 393181
Int. Cl.³ A01M *1/02*
U.S. Cl. 43—122 **2 Claims**



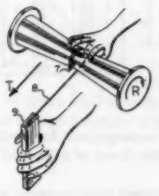
1. An insect trap comprising:
(a) an intermediate, annular member,
(b) means for securing an insect luring, odour emitting substance in a substantially central position in the annular member,
(c) two hollow, truncated-cone-shaped casing members which are capable of being nested together,
(d) means for securing inner, annular ends of the casing members to each side of the annular member, with at least one of the casting member being secured in a removable manner, the means for securing the inner, annular ends of the casing members to each side of the annular member comprises arcuate flanges spaced around the inner ends of the casing members, arcuate flanges receiving members circumferentially spaced around the intermediate, annular member, and an inner, annular web attached to the intermediate, annular member and end webs on the arcuate flange receiving members, the flange receiving members being spaced from the inner, annular web to receive, by relative rotational movement, the arcuate flanges therebetween as a press-fit until the arcuate flanges abut against the end webs.

4,452,007

HORIZONTAL AXIS ROTATORY FRUSTUM FLYING TOY

Lynn W. Martin, 2314 Hiram, Wichita, Kans. 67213

Filed Apr. 12, 1982, Ser. No. 367,684
Int. Cl.³ A63H *27/00, 27/14*
U.S. Cl. 446—74 R **6 Claims**



1. In a rotor aircraft having a generally-circular-cross-section elongate frustum portion having lateral and longitudinal axes intersecting at its center, said elongate frustum portion having a continuous circumferential surface extending symmetrically from a plane containing the longitudinal axis and, said plane being perpendicular to said lateral axis, said surface terminating at opposed end portions, an improvement in the aerodynamic structural configuration of said rotor aircraft for enhancing said aircraft's effective dihedral and lateral stability, said improvement comprising said elongate frustum portion comprising more than one smaller conelike frustum, each said conelike frustum having its smaller periphery closer to the midportion of said elongate frustum portion and rotor aircraft than its larger periphery, each smaller periphery that is adjacent to a larger periphery being smaller than the adjacent larger periphery; the physical characteristics of said aircraft, including its dimensions and weight, being selected to enhance the ease of imparting to it rotatory and translational motions which meet Magnus rotor flight parameters; and a further improvement comprising means at the midportion of said rotor aircraft for temporarily connecting means to launch said aircraft.

5. A method for catapult launching a Magnus-rotor-lifting-effect aircraft, said aircraft including a Magnus rotor, said method comprising temporarily connecting a line to the rotor, wrapping the line around the rotor, holding the aircraft with one hand and the line with the other hand, releasing the aircraft-holding-hand, and pulling suitably hard and long on the line with sufficient skill to impart rotatory and translational motion meeting Magnus rotor flight parameters to the rotor while the line unwinds and disengages from the rotor.

4,452,008

SEED COATINGS

Mohammad A. Sandhu; Clarence C. Dannelly, and Bernard W. Oliver, Jr., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 241,300, Mar. 6, 1981. This application Jul. 6, 1983, Ser. No. 511,361
Int. Cl.³ A01C *1/06*
U.S. Cl. 47—57.6 **5 Claims**

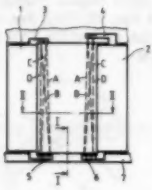
1. Seeds of leguminous plants having a coating comprising the reaction product of a compound of titanium and a nitrogen-containing polymer.

4,452,009

LIGHT BARRIER, PARTICULARLY FOR AUTOMATICALLY ACTUATED LIFT CABIN DOORS

Josef Baumeler, Horw, and Hans-Ulrich Egli, Adligenswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 22, 1982, Ser. No. 443,374
Claims priority, application Switzerland, Dec. 3, 1981, 7725/81
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—25 **6 Claims**



1. A light barrier arrangement for controlling the automatic actuation of two cabin doors of a lift, said light barrier arrangement comprising:

at least one respective light receiver connected to each lift cabin door and arranged to be displaced together with the related cabin door;

at least one respective light emitter operatively associated with each light receiver;

each said light emitter being mounted displaceably in a door sill and each said light receiver, in a predetermined position of the related cabin door, being located vertically above the related light emitter;

each cabin door being provided with an entrainment element for entraining the related light emitter during the movement of such cabin door; and

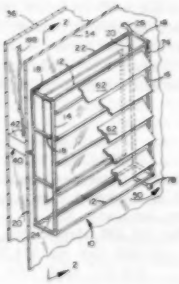
cleaning means provided at a bottom edge of each cabin door, so that the region of the door sill through which passes the light emitted from the light emitters is cleaned during each of the opening and closing movements of the cabin doors.

4,452,010

WINDOW SECURITY SYSTEM

Adron L. Whittington, 2710 Bristol Ave., Stockton, Calif. 95204, and Willie D. Whittington, 1528 Barcelona, Stockton, Calif. 95209

Filed May 20, 1982, Ser. No. 380,127
Int. Cl.³ E06B *3/68*
U.S. Cl. 49—51 **6 Claims**



1. An improved grate and latching combination for providing security to a building wherein the improvement comprises:

a pivotal grate attached to the side of a building;

a latch pin connected to said grate formed by a pin having an enlarged head with a reduced end;

jaw means for securing said enlarged head of said latch pin which open and close around said enlarged head of said latch pin on a pivotal basis and which are supported by two pivot points wherein each jaw forms an elongated member pivoted on said pivot points;

toggle means attached to said pivotal jaws formed by two members that are pivotally connected on said pivotal jaws and wherein said toggle members are connected by means of a pin so that as said pin is moved with respect to said jaws, it causes said pivotal members to pivot upwardly and downwardly, thereby opening and closing said jaws;

electrical drive means formed as a solenoid attached to said pin that is connected to said toggle;

a solenoid driver connected to a power source for providing power to said solenoid when said solenoid driver is actuated; and,

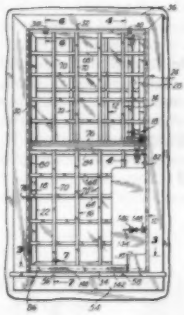
a smoke detector connected to said solenoid driver for providing a signal to said driver for opening and closing said jaws when smoke is detected by causing said solenoid driver to cause said solenoid to open and close said jaws.

4,452,011

GRILL-TYPE WINDOW GATE APPARATUS

David T. Trombettas, 41-35 45th St., Long Island City, N.Y. 11104

Filed May 6, 1982, Ser. No. 375,404
Int. Cl.³ E06B *3/68*
U.S. Cl. 49—56 **19 Claims**



1. A grill-type window gate apparatus for securing an opening in a building comprising

frame means capable of being mounted with respect to the walls of a building defining said opening,

mounting means for connecting said frame means with respect to said walls,

a grillwork panel slidably mounted on said frame means,

said grillwork panel being capable of movement between an open and a closed position,

panel locking means mounted on said grillwork panel capable of locking said grillwork panel to said frame means when said grillwork panel is in said closed position,

window locking means mounted on said frame means for locking a window mounted in said opening,

said window locking means having an open position and a locked position, and

said window locking means being operably connected with said grillwork panel to maintain said locked position when said grillwork panel is in said closed position.

4,452,012

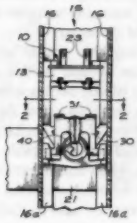
PIVOT SHOE FOR SASH BALANCE

Stephen M. Deal, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,279

Int. Cl.³ E05D *15/22*

U.S. Cl. 49—181 **9 Claims**



1. A pivot shoe connectable to a sash by a pivot bar and movable up and down in a jamb channel with said sash for connecting to a lower end of a sash balance and allowing said sash to pivot, said pivot shoe comprising:

a. a resin body shaped to guide on the sides of said jamb channel;

b. a cam pivotally housed within said body and slotted to receive said pivot bar;

c. a jamb end of said cam being profiled;

d. a bite spring mounted on a jamb side of said body below said cam and upwardly inclined toward the bottom of said jamb channel above said cam;

e. a follower cam on said bite spring arranged for following said profiled end of said cam to tilt said bite spring toward said channel bottom as said sash and said cam pivot away from vertical;

f. resin projections on said body arranged for holding said bite spring in place and resiliently retracting said bite spring away from said channel bottom when said sash and said cam pivot back to vertical; and

g. a biting edge on an upper edge of said bite spring arranged for biting into said channel bottom when tilted against said channel bottom by said cam and follower for resisting upward movement of said pivot shoe in said jamb channel from the bias of said sash balance.

4,452,013

OPENING AND CLOSING MECHANISM FOR A VEHICLE SUNROOF

Kazuhisa Nagata, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Aug. 3, 1982, Ser. No. 404,778

Claims priority, application Japan, Aug. 14, 1981, 56-128044

Int. Cl.³ E05F *11/08*

U.S. Cl. 49—344 **14 Claims**

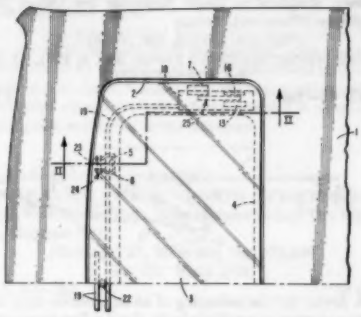
1. An opening and closing mechanism for a vehicle sunroof of the type having a tiltable roof panel hinged to a framed roof opening for pivotal movement generally along one edge thereof, the mechanism comprising:

a sliding shoe assembly adapted to be secured to the roof frame, said assembly having a sliding shoe and guide means therefor;

a rigid actuating member adapted to interconnect said sliding shoe and said roof panel, said actuating member being pivotally connected at one location to said sliding shoe and adapted to be pivotally connected at a second location to said roof panel;

drive means for selectively sliding said shoe along said guide means; and

cam means including a cam track and a cam follower for guiding the movement of said actuating member relative to the roof frame so that sliding movement of said shoe



produces upward or downward movement of said actuating member at said second location to tilt said roof panel.

4,452,014

DEVICE FOR OPERATING A SLIDING DOOR

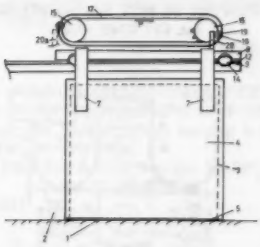
Jan J. G. Markus, Krimpen Aan Den Ijssel, Netherlands, assignor to Markus Hermetische Deuren B.V., Krimpen Aan Den Ijssel, Netherlands

Filed Nov. 30, 1982, Ser. No. 445,418

Claims priority, application Netherlands, Dec. 28, 1981, 8105876

Int. Cl.³ E05F *11/00, 11/38*

U.S. Cl. 49—360 **7 Claims**



1. In a sliding door of the type wherein the door is movable from a first position toward a second position by a first lifting motion followed by a sliding motion, the improvement comprising operating means for moving the door from its first position toward its second position, said operating means including an endless chain carried by at least two guiding wheels disposed above said door in a plane parallel thereto,

abutment means associated with said door, and

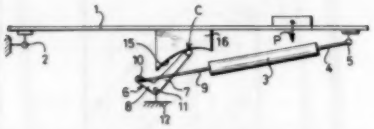
catch means for engaging said abutment means and for urging said door from said first position toward said second position disposed on said endless chain to travel therewith; so that inital movement of said endless chain and catch means against abutment has a relatively large vertical component which gradually approaches zero as the door is urged from its first position toward its second position by said catch means.

4,452,015

BALANCING DEVICE FOR AUTOMOBILE DECK LID

Bascou Jacques, Maule, and Roue Yves, Puteaux, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 1, 1982, Ser. No. 413,713
Claims priority, application France, Sep. 4, 1981, 81 16818
Int. Cl.³ E05F 1/10
U.S. Cl. 49—386 4 Claims



1. A device for the balancing of an automobile deck lid, said lid being pivoted to a vehicle body about a first horizontal axis at one end of said lid, said device comprising:

at least one balancer, one end of each said balancer being pivotally connected to said lid at a point spaced from said one end of said lid;

a bent counterlever for each said balancer, each said counterlever comprising a first arm, a second arm having a length unequal to said first arm and a bend between said first and second arms, said counterlever being pivoted to said vehicle body about a second axis parallel to said first axis, said first arm extending towards said first axis at a distal end, wherein a second end of each said balancer is pivotally connected to said distal end of a corresponding said first arm; and

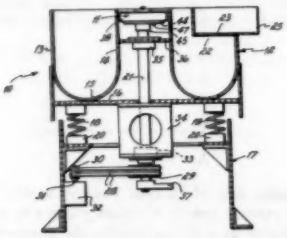
a cam fixed to said lid, said cam including a curved cam surface, wherein a distal end of said second arm is in contact with said cam surface.

4,452,016

REVERSING WEIGHT FOR VIBRATING FINISHING MACHINES

Curtis O. Majors, Cincinnati, Ohio, assignor to Rosemont Industries, Inc., Cincinnati, Ohio

Filed Feb. 26, 1982, Ser. No. 352,766
Int. Cl.³ B24B 31/06
U.S. Cl. 51—163.2 5 Claims



1. In a vibratory finishing machine of the type comprising an annular tub for holding workpieces and a finishing medium, a base, spring means mounting said tub upon said base, a motor, a drive shaft disposed vertically on the axis of said tub and means interconnecting said motor and said drive shaft for rotating said drive shaft in either of two directions, means interconnecting said shaft and said tub for imparting vibrational movements from said shaft to said tub, said shaft carrying a first eccentric weight fixedly mounted thereto, the improvement which comprises:

a reversible weight assembly;

said reversible weight assembly comprising a housing including an upstanding peripheral wall and a substantially horizontal bottom wall, means fixedly mounting said housing upon said shaft spaced from said eccentric weight, said housing being connected to said shaft and being rotatable with said shaft when said shaft is driven in either direction;

first and second baffles extending transversely of said housing from a center portion thereof to the peripheral wall, said baffles defining a weight chamber within said housing and a plurality of movable weights disposed within and partially filling said chamber;

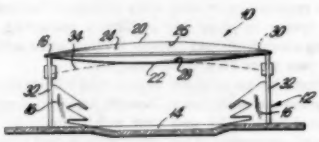
said weights being movable across said bottom wall in a direction transverse of said baffles and being collected adjacent to the first of said baffles when the shaft is rotated in one direction to establish a first angular offset between the center of gravity of said shiftable weights and said eccentric weight and being shiftable into proximity with said second baffle when the direction of rotation of the shaft is reversed to establish a second offset angle between the center of gravity of said shiftable weights and the eccentric weight to thereby cause a reversal in direction of movement of the contents of said tub.

4,452,017

AIR INFLATED BUBBLE ROOF

Man-Chung Tang, and Yee-Yun Tang, both of Jamaica, N.Y., assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,185
Int. Cl.³ E04G 11/04; B28B 7/32
U.S. Cl. 52—2 22 Claims



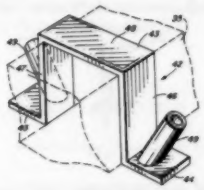
1. Air inflated bubble roof comprising a compression ring defining the perimeter of a space to be covered by the roof, a lower cable net and an upper cable net each connected to said compression ring so that said nets span the space encircled by said compression ring, said lower cable net and upper cable net each formed of a number of cables arranged in at least two layers one above the other with the cables in one layer extending transversely of the cables in the other layer and each having a length between the connections to said compression ring greater than the rectilinear dimension between the connections, an inflatable membrane member located between said lower and upper cable nets and in the inflated condition said membrane member contacts and bows said upper and lower cable nets away from one another providing the membrane with a lenticular shape and providing said cables forming said upper and lower cable nets with an arcuate shape, said inflatable member comprising an upper membrane part and a lower membrane part and when inflated to form the bubble roof said upper membrane part remains in contact with said upper cable net and said lower membrane part remains in contact with said lower cable net, and means located between the lower and upper membrane parts for forming a seal between the lower and upper membrane parts of said inflatable membrane member adjacent to the outer edges of said membrane parts extending around the perimeter of the roof.

4,452,018

DEVICE FOR ANCHORING A BUILDING

Claud A. Hill, 2706 E. Contention Mine Rd., Phoenix, Ariz. 85034

Division of Ser. No. 165,143, Jul. 1, 1980, Pat. No. 4,342,179.
This application Apr. 8, 1982, Ser. No. 366,771
Int. Cl.³ E02D *27/32, 5/74*
U.S. Cl. 52—155 **2 Claims**



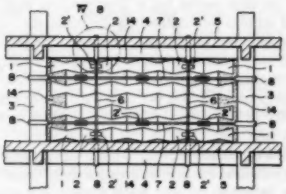
1. A device for anchoring the ground engaging surface of a frame supporting rail to a construction site comprising:
- clamp means for surrounding at least a part of the exposed surface of the ground engaging rail,
- said clamp means comprising a first foot extending laterally outwardly of one side of the base of said rail at its ground engaging surface,
- a first aperture arranged to extend through said first foot,
- a first elongated hollow collar, and
- a first means for attaching one end of said first collar over said first aperture to assume an angular relationship with the longitudinal axis of said rail,
- said first means for attaching said first collar to said rail further comprising an indexing means in said first foot for positioning said first collar relative to said rail,
- said angular relationship spacing the other end of said first collar at a predetermined distance from the top of said rail.

4,452,019

ANTISEISMIC REINFORCEMENT METHOD FOR AN EXISTING BUILDING WITH A CONCRETE BLOCK SYSTEM

Yamaguchi Ikuo; Higashibata Yasuo; Fujimura Masaru; Nagashima Toshio, all of Tokyo, and Sugano Shunsuke, Yokohama, all of Japan, assignors to Takenaka Komuten Co., Ltd., Osaka, Japan

Filed May 7, 1980, Ser. No. 147,364
Int. Cl.³ E04B *1/98;* E04H *9/02*
U.S. Cl. 52—167 **4 Claims**



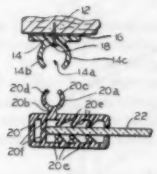
1. An antiseismic reinforcement structure for a building comprising:
- (a) concrete blocks provided with sloped areas extending from the edges along the width and meeting at the horizontal center of a longitudinal side thereof on both top and bottom faces so as to form slopes symmetrical horizontally and vertically at the center thereof, said concrete blocks being laid in a manner such that side faces of the concrete blocks contact closely to each other and said concrete blocks laid in the above described manner being piled in layers such that two of said blocks horizontally abut each other immediately above a central ridge line of another concrete block laid in a layer immediately below a layer occupied by said horizontally abutting blocks;
- (b) stud plates attached to vertical faces of some of said concrete blocks; and
- (c) support bands arranged both horizontally and vertically on front and back faces of the building's pillar and beam structure to be welded to said stud plates with both ends of said support bands being connected to said pillar and beam structure whereby a wall is formed which is integral with said pillar and beam frame structure.

4,452,020

INSULATING STORM WINDOW ATTACHMENT

David G. Werner, Oshkosh, Wis., assignor to Seal Tite National, Inc., Oshkosh, Wis.

Filed Apr. 27, 1982, Ser. No. 372,336
Int. Cl.³ E06B *3/26*
U.S. Cl. 52—202 **16 Claims**



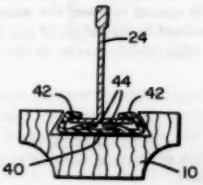
1. An insulating storm window assembly for attachment to an existing window casing, for providing enhanced insulation characteristics for the window comprising:
- a storm window frame, having a slot;
- a storm window glazing fastened into the slot of said frame;
- said storm window frame also having a ridge;
- a frame retainer, having channel means for snap-accepting the ridge of said frame such that said frame is allowed to pivot with respect to said retainer, and thus providing an airtight seal; and
- means for permanently attaching said retainer to the existing window casing.

4,452,021

NATURAL WOOD SUSPENDED WOOD CEILING OR WALL SYSTEM EMPLOYING CLIP MEANS

James W. Anderson, Mound, Minn., assignor to Construction Concepts, Inc., Mound, Minn.

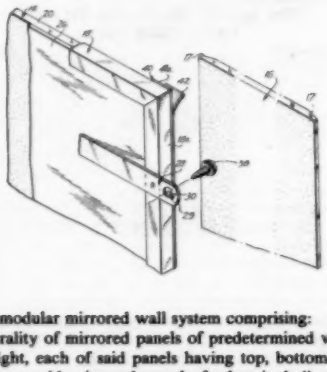
Filed Feb. 5, 1982, Ser. No. 346,085
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—311 **4 Claims**



1. A clip for coupling a molding element to a T-shaped support member comprising:
- a body member formed to be received within a recess formed within said molding element;
- first and second projections extending from said body member for mounting about the side edges of an exposed face of said support member; and

third and fourth resilient projections extending upwardly from said body member so as to compressively contain the exposed face of said support member between said first and second projections and said third and fourth projections, thereby securing said clip and molding element to said support member.

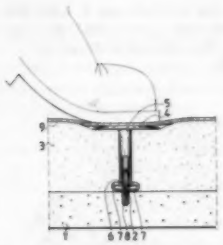
4,452,022
MIRRORED WALL SYSTEM
Joseph Bezborodko, 5235 Fieldston Rd., Bronx, N.Y. 10471
Filed Jul. 30, 1982, Ser. No. 403,549
Int. Cl.³ B44F 7/00
U.S. Cl. 52—311 **5 Claims**



1. A modular mirrored wall system comprising:
a plurality of mirrored panels of predetermined width and height, each of said panels having top, bottom and side edges, said mirrored panels further including backing panels, said backing panels providing rigidity to said mirrored panels;
a framing means for each of said mirrored panels, said framing means including a framing member having top, bottom, and side edges which respectively encase the top, bottom and side edges of each of said mirrored panels;
at least one securing strap for securing each of said mirrored panels to the wall, said securing strap extending between the side edges of said framing member and terminating in end sections disposed outwardly of the side edges of said framing member, each of said end sections including an aperture adapted for securing said framing member to the wall;
at least one mirrored strip, said strip being of the same height as the mirrored panels but of smaller width; and
means for fixedly securing said mirrored strip in overlying relation with respect to the side edges of adjacent mirrored panels so that when the adjacent mirrored panels are positioned in spaced relation, the mirrored strip overlies the space defined by the edges of said mirrored panels to provide an adjustability feature in the mirrored wall system.

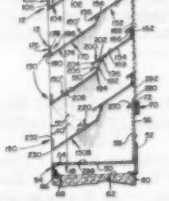
4,452,023
FIXING MEANS
Erik Stahlberg, Espoo, Finland, assignor to Rakennusruuvi Oy, Helsinki, Finland
Filed Oct. 19, 1981, Ser. No. 312,790
Claims priority, application Finland, Oct. 20, 1980, 803296
Int. Cl.³ E04B 1/80, 5/16
U.S. Cl. 52—378 **3 Claims**

1. A fixing means for attachment of a resilient thermal lagging, such as a mineral wool mat, to a base, such as a level roof of concrete, comprising a washer located on top of the lagging and having a hollow tube extending therefrom and penetrating partly into the lagging, a screw located in the interior of the tube and piercing the bottom of said tube, a plug to be tightly fitted into a drilled hole in the base, into which plug the screw



can be screwed, and stays connecting said plug to the bottom of the tube.

4,452,024
WATER PENETRATION PREVENTING LOUVER
James Sterriker, Minnetonka, and George Schlechter, Buffalo, both of Minn., assignors to Industrial Louvers, Inc., Delano, Minn.
Filed Mar. 7, 1979, Ser. No. 18,180
Int. Cl.³ E06B 7/08
U.S. Cl. 52—473 **7 Claims**



1. A louver for use in a port in a building, comprising:
a top cap including a central section;
a flange section on one edge of said central section, said flange section including a first portion attached to said central section and extending downwardly, and a second portion attached to said first portion to be angled inwardly toward said central portion and downwardly therefrom for providing a path over which water can flow upon impinging on said first portion, said water being directed inwardly in the direction of said central section by said second portion;
a C-shaped top blade having a back flange attached to said top cap central section and depending therefrom, a web section attached to said back flange and extending forwardly therefrom, and a lip on said web section, said web section being located beneath said top cap to collect water draining from said top cap second portion so that water draining from said top cap is collected by said top blade and prevented from entering a port; and
an intermediate louver blade in the port and located beneath said top blade, said intermediate louver blade including a longitudinal centerline and a C-shaped section located adjacent a front portion of the port and having a planar web section and an upturned flange on one side of said web and an upwardly and rearwardly slanted flange on an opposite side of said web, and a J-shaped section located adjacent the rear portion of the louver and which includes

a planar leg having a free side and an upturned flange on an opposite side of said leg, said web being offset beneath said planar leg and in spaced parallelism therewith, said slanted flange being connected to said planar leg at a location spaced from said free side to define a lip overhanging said slanted flange and located near said longitudinal centerline; and

a drainage system associated with said top blade lip and said intermediate louver blade upturned flange for conducting water away from said blades.

4,452,025

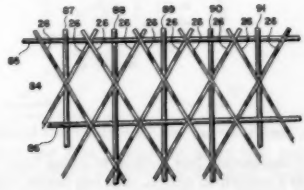
SELF-INTERLOCKING GRILLE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 58,556, Jul. 18, 1979, Pat. No. 4,282,695. This application Nov. 12, 1980, Ser. No. 206,303

Int. Cl.³ E04C 2/42

U.S. Cl. 52—668 **8 Claims**



1. A self-interlocking grill comprising in combination:

(a) a first plurality of bars having opposite edges, said plurality of bars disposed parallel to each other in first direction, each of said plurality of bars including;

(1) series of notches extending inwardly from said edges in alternating fashion, each of said notches having an open and closed end with an imprint of a hole provided at the closed end thereof; and

(2) a series of holes disposed along the middle of said strip at the midpoints between adjacent notches;

(b) a second plurality of bars having opposite edges, said plurality of bars disposed parallel to one another in second direction, each of said plurality of bars including;

(1) a series of notches extending inwardly from said edges in alternating fashion, each of said notches having an open and closed end with an imprint of a hole provided at the closed end thereof; and

(2) a series of holes disposed along the middle of said strip at the midpoints between adjacent notches; wherein said first and second plurality of bars cross each other and said notches included in said first plurality of bars engage said notches included in said second plurality of bars;

(c) a first plurality of rods disposed parallel to one another in said first direction, each of said first plurality of rods engaging and extending through a series of said holes included in said second plurality of bars wherein said first plurality of rods and said first plurality of bars are disposed parallel to each other in alternating fashion;

(d) a second plurality of rods disposed parallel to one another in said second direction, each of said second plurality of rods engaging and extending through a series of said holes included in said first plurality of bars wherein said second plurality of rods and said second plurality of bars are disposed parallel to each other in alternating fashion.

4,452,026

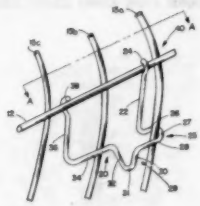
SPACER FOR WIRE REINFORCEMENT IN CONCRETE STRUCTURES SUCH AS PIPE

Wilbur E. Tolliver, 364 Hamilton Dr., Holland, Mich. 49423

Filed Sep. 28, 1981, Ser. No. 305,969

Int. Cl.³ E04C 5/16

U.S. Cl. 52—684 **49 Claims**



1. A spacer for use with a wire reinforcement in the manufacture of wire reinforced concrete articles, said reinforcement including a plurality of spaced first set wires joined to a plurality of spaced second set wires oriented generally laterally to said first set wires, said spacer comprising:

torsion means for storing a torsion force exerted thereon;

a spacer portion extending away from said torsion means; and

torsional force generating means operably connected to said torsion means for engaging said reinforcement and for generating a torsion holding force within said torsion means for assisting in holding the spacer on said wire reinforcement.

4,452,027

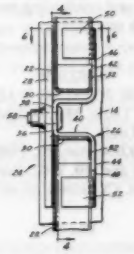
PANEL CLIP

Rajendra K. Desai, Troy, Mich., assignor to Whitehead & Kales Company, River Rouge, Mich.

Filed Sep. 28, 1981, Ser. No. 306,195

Int. Cl.³ E04B 1/38

U.S. Cl. 52—712 **2 Claims**



1. Bracket structure adapted to hold a panel in place on the side of a rail car, said bracket structure comprising a corner panel clip formed from a plate of integral one-piece construction and having a central channel-shaped portion of the side walls of which extend down from the web thereof and at their extremities are bent laterally outwardly in opposite directions to provide coplanar flange portions, and an integral tab bent up from each flange portion at a substantial angle to the plane thereof, said tabs terminating at a level beneath that of the web of said channel-shaped portion, and a clamping plate removably secured to the web of the channel-shaped portion of said panel clip and overlying the upper extremities of said tabs in spaced relation thereto sufficient to provide enough clearance to accommodate a panel.

4,452,028

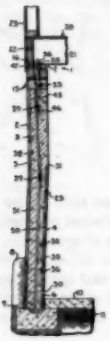
STRUCTURE AND METHOD FOR REINFORCING A WALL

Willard S. Norton, 5608 NE. Oaktree La., Kansas City, Mo. 64118, and Robert G. Samuelson, Kansas City, Kans., assignors to Willard S. Norton, Kansas City, Mo.

Continuation-in-part of Ser. No. 188,936, Sep. 19, 1980, Pat. No. 4,353,194. This application Dec. 3, 1981, Ser. No. 327,262

Int. Cl.³ E04B *1/04*; E04G *23/02*, E02D *37/00*

U.S. Cl. 52—744 9 Claims



1. A method of reinforcing an existing wall having a face and a structural member positioned on top thereof, said wall comprising a plurality of blocks with vertically aligned passages, which includes the steps of:

(a) forming an opening in a plurality of said blocks at said wall face into a respective plurality of said aligned passages;

(b) placing a lower reinforcing bar through said opening and in a lower portion of said aligned passages;

(c) placing an upper reinforcing bar through said opening and in an upper portion of said aligned passages;

(d) attaching said upper reinforcing bar to said structural member;

(e) connecting said lower and upper reinforcing bars; and

(f) placing a material which cures to a hardened state in said passages whereby said reinforcing bars are fixedly secured to said wall within said passages.

4,452,029

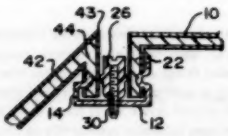
METHOD FOR JOINING WALL PANELS

Ronald D. Sukolics, St. Louis, Mo., assignor to Carl Dunmon & Associates, Inc., St. Louis, Mo.

Division of Ser. No. 139,004, Apr. 10, 1980, Pat. No. 4,344,267. This application Jun. 10, 1982, Ser. No. 387,278

Int. Cl.³ E04G *21/00*

U.S. Cl. 52—747 3 Claims



1. A method of joining panel members along their edges for providing thermal expansion comprising providing said panel members with turned down edges having longitudinal grooves running on the inside face and along the length of said edges, providing a channel having longitudinal ridges along the inner walls of its sides for fitting into said longitudinal grooves of said turned down edges, said ridges sized to cooperate with said grooves to allow pivotal movement of said edges around the ridges, securing said channel to a support for supporting the panels in place, locating the turned down edges of said panel members in a side-by-side relationship in said channel so that said grooves interlock with said ridges, and inserting a wedging strip between said turned down edges for maintaining said grooves over said ridges whereby the shape of said wedging strip, said grooves and said ridges cooperate so as to permit pivotal movement of said edges around said ridges for allowing thermal expansion of said panels.

4,452,030

CONTAMINATION-FREE METHOD AND APPARATUS FOR FILLING SPOUTED BAGS WITH A FLUID

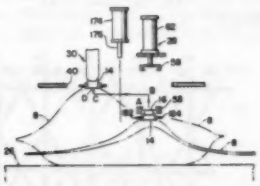
Junji Inada, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 230,705, Feb. 2, 1981. This application Jun. 27, 1983, Ser. No. 508,198

Claims priority, application Japan, Feb. 5, 1980, 55-12593

Int. Cl.³ B65B *1/34*

U.S. Cl. 53—426 13 Claims



1. A contamination-free method of filling bags with a fluid product to a prescribed weight, each bag having a spout openably closed with a cap, which method comprises:

(a) providing a filling valve assembly and a cap remover assembly in fixed positions and in side-by-side relation in a germfree chamber, the filling valve assembly having a filling head for downwardly dispensing the fluid product through an opening in the bottom of the chamber;

(b) providing a weighing platform under the germfree chamber;

(c) sterilizing at least the germfree chamber and the interior of the filling head;

(d) supporting a bag on said weighing platform while holding the spout of a bag in a first position substantially within the chamber;

(e) removing the cap from the spout of the bag in the first position by the cap remover assembly;

(f) carrying the open spout of the bag to a second position substantially within the chamber and under the filling head while the bag is supported on the weighing platform;

(g) raising the spout into engagement with the filliing head located above the spout and charging the fluid product into the bag from the filling head through the open spout to an extent less than the prescribed weight while the spout of the bag is being held against the filling head;

(h) lowering the spout of the bag from the filling head to said second position to disengage the spout from the filling head and to freely rest the bag on the weighing platform;

(i) further charging the fluid product into the bag from the filling head to the prescribed weight, as ascertained by the weighing platform, while the spout of the bag is being held at a slight distance from the filling head;

(j) carrying the spout of the filled bag back to the first position;

(k) reclosing the spout of the bag with the cap by the cap remover assembly; and

(l) introducing sterilized air under pressure into the germfree chamber at least throughout the steps (d) through (k), inclusive, to maintain the chamber at a higher-than-atmospheric pressure.

4,452,031

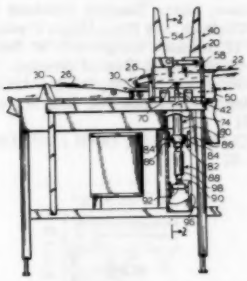
AUTOMATIC CARD DISPENSER AND PICK-OFF ASSEMBLY

Edmund G. Dennis, Belle Terre, and C. Edward Brandmaier, Centerport, both of N.Y., assignors to Cashin Systems Corp., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 143,529, Apr. 24, 1980, Pat. No. 4,328,657. This application Apr. 12, 1982, Ser. No. 367,780

Int. Cl.³ B65B *25/06, 49/16*

U.S. Cl. 53—586 7 Claims



1. A cardboard sheet dispenser for use on a food product slicing machine line that groups the slices into segregated batches of predetermined measure, the dispenser being operable to dispense a sheet of cardboard from a storage area to a first location at which a batch of the slices are placed thereon, the cardboard sheet dispenser comprising:

a hopper for containing a plurality of vertically stacked cardboard sheets, the hopper including a base and a plurality of strippers at the base for cooperating in supporting the stack and cooperating in separating the cardboard sheets at the base to assure against sticking of the cardboard sheets to one another while permitting only one cardboard sheet at a time to be removed from the base of the hopper;

a pick-off assembly for removing the lowermost cardboard sheet from the hopper and transferring it to a second location, the pick-off assembly including a first piston-cylinder assembly assuming a normal vertically disposed position below the hopper and the first piston-cylinder assembly having at least one suction cup at the free end of the piston, the piston adapted to be actuated between a retracted position away from the base of the hopper and an extended position at which the suction cup is adapted to be placed into engagement with and secure by suction the lowermost cardboard sheet in the hopper, upon retraction of the piston, the lowermost cardboard sheet secured by the cup is adapted to be lowered to a lowered position, a second piston-cylinder assembly rigidly connected with and secured to the first piston-cylinder assembly, the piston of the second piston-cylinder assembly adapted to be actuated between a retraction position at which both piston-cylinder assemblies are adapted to assume a normal vertically disposed position and an extended position, camming means for tilting the piston-cylinder assemblies from a normally disposed vertical position to a tilted position when the piston of the second piston-cylinder assembly is in an extended position; and

conveying means for conveying the sheet at the second location to the first location at a predetermined time to permit the batch to be placed thereon.

4,452,032

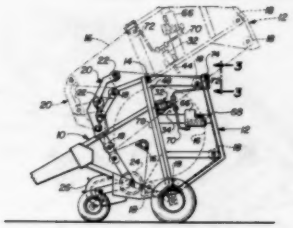
APPARATUS AND METHOD FOR LUBRICATING APRON CHAINS ON ROLL BALING MACHINES

James T. Clevenger, Jr., Lancaster; Donald L. Sheesley, New Holland, and John S. Richardson, Jr., Terre Hill, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 30, 1982, Ser. No. 413,114

Int. Cl.³ A01D *69/12*

U.S. Cl. 56—12.3 4 Claims



1. In a roll baling machine having a base frame, a rear frame connected to said base frame for movement between a lower position and upper position, an apron movably supported on said base frame and said rear frame for forming roll bales of crop material, said apron including flexible chains and transverse members extending between and interconnecting said flexible chains, the improvement of an apparatus for lubricating said flexible chains, said apparatus comprising:

(a) a reservoir containing lubricant mounted on said rear frame;

(b) pump means mounted on said rear frame, said pump means defining a fluid chamber therein;

(c) first conduit means extending between said reservoir and said pump means;

(d) second conduit means extending between said pump means and said flexible chains;

(e) said pump means being operated to draw a charge of lubricant from said reservoir through said first conduit means into ssaid fluid chamber in response to movement of said rear frame to said upper position;

(f) said pump means being operated to pump said charge of lubricant from said fluid chamber through said conduit means onto said flexible chains in response to movement of said rear frame from said upper position to said lower position; and

(g) said pump means including actuating means for engaging said base frame when said rear frame is moved from said upper position to said lower position in order to actuate said pump means to deliver lubricant through said second conduit means onto said flexible chains.

4,452,033

LAWN MOWING AND TRIMMING APPARATUS

Pascal Scramuzza, 2804 D'Abadie St., New Orleans, La. 10130

Filed May 20, 1982, Ser. No. 380,032

Int. Cl.³ A01D *35/264*

U.S. Cl. 56—12.7 10 Claims

1. A lawn-mowing and trimming apparatus which comprises:

(a) a platform which unitarily comprises:

(i) a rear portion;

(ii) a recessed front portion;

(b) a skirt extending downwardly from the rear portion of the platform;

(c) a skirt extending downwardly from the front portion of a platform;

(d) four or more pneumatic rubber wheels mounted to said skirt and downwardly from said rear portion of said platform, two or more on each side thereof;

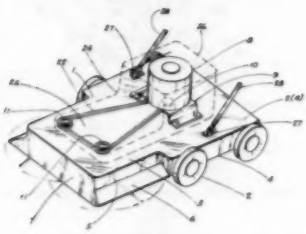
(e) a housing mounted to said rear portion of said platform which encloses:

(i) a motor;

(ii) a pulley wheel which comprises a vertical shaft, said shaft being torqued by said motor;

(f) pulley wheels mounted on said front portion of said platform, each of said pulley wheels comprising a pulley shaft;

(g) a cutting assembly mounted to the bottom end of each of said pulley shaft, which comprises:



(i) a collar;

(ii) a cylindrical donut fixedly attached to the bottom of said collar, wherein said donut comprises a cutting element;

(h) a single, unitary major housing which encloses the housing mounted on the rear portion of the platform and said pulley wheel;

(j) handle bars means for manipulating the apparatus.

4,452,034

ELONGATED CUTTING MECHANISM HAVING A REMOVABLE LATERAL SHIELD

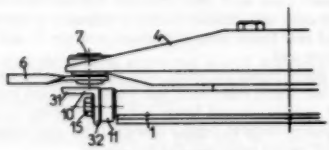
Horst Neuerburg, Haegen, France, assignor to S.A. Kuhn, Saverne, France

Filed Mar. 24, 1982, Ser. No. 361,458

Claims priority, application France, Apr. 2, 1981, 81 06997

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—320.1 **9 Claims**



1. A cutting mechanism having an elongated frame defining a cutting side, and adapted to be fitted to a mower or the like so that the cutting side faces in the direction of advancement of the mower,

comprising in combination,

a plurality of disks rotatably mounted on said frame, each including at least one cutting blade, at least one of said disks being operatively drivable from beneath, said frame further including two end portions at least one of said end portions having an opening,

a disk protector for each of said disks mounted on said frame near said cutting side,

drive means mounted on said frame coupled to at least said one disk for driving said disk, and

protecting means releasably mounted to said frame near said one open frame end portion and upon being mounted protecting the disk located at said end portion against lateral impact by a foreign object and closing said opening, and

said frame further including another side opposite said cutting side and a cross-section of a predetermined internal contour, said opening extending near at least one of said sides and substantially lining at least part of said contour so as to provide a conduit for discharging cleaning fluid along with any impurities contained therein during a washing of the interior of said frame.

4,452,035

THREAD SPLICING DEVICE

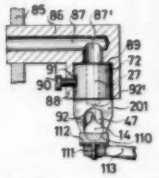
Joachim Rohner; Heinz Zumfeld; Reinhard Mauries, all of Monchen-Gladbach, and Hans-Jürgen Preuhs, Willich, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,309

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040661

Int. Cl.³ B65H *69/06*; D01H *15/00*; D02J *1/08*

U.S. Cl. 57—22 **28 Claims**



1. Thread splicing device, comprising a stationary base body having a first compressed-air canal formed therein, a splicing head being interchangeably connected to said base body, said splicing head having a second compressed-air canal formed therein being in communication with said first compressed-air canal formed in said base body, said splicing head having a plurality of air discharge nozzles formed therein being in communication with said second compressed-air canal formed in said splicing head, and said splicing head having a splicing chamber formed therein being in communication with said air discharge nozzles formed in said splicing head, said splicing chamber including a selectively coverable longitudinal slot for inserting and joining threads, at least one of said nozzles forming an air swirl in a given direction around the inserted threads, and at least another of said nozzles forming an air swirl in a direction opposite said given direction around the inserted threads.

4,452,036

METAL BRACELET IN THE FORM OF A BAND COMPRISED OF MEMBERS LINKED ONE WITH RESPECT TO THE OTHER

Jean-Pierre Gay, Presinge, Switzerland, assignor to Gay Freres, S.A., Geneva, Switzerland

Filed Dec. 7, 1982, Ser. No. 447,661

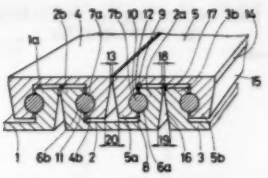
Claims priority, application Switzerland, Feb. 3, 1982, 652/82

Int. Cl.³ F16G *13/00*

U.S. Cl. 59—80 **8 Claims**

1. A metal bracelet in the form of a band, comprised of members linked one with respect to the other by means of pins, and comprised essentially of members, each having a generally U-shaped configuration of the same internal profile, and arranged in at least two rows which are superimposed in a staggered manner and opposed, by the sides of the members, so that the members of the same row are engaged by their sides with the members of the other row, these sides comprising, on their inner face, a curved surface defining, with a similar curved surface of the opposite side of the adjacent member engaged in a staggered manner, a passage for a pin of corre-

sponding shape, the clearance between the two adjacent members of the same row being less then the distance necessary to separate one of the members from the pin and from its associ-



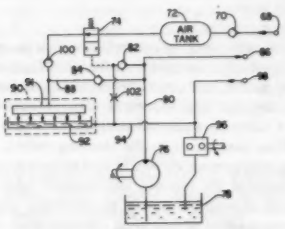
ated member when moving said one member away from said pin toward said associated member, and means on said pin retaining the members transversely with respect to the bracelet.

4,452,037

AIR PURGE SYSTEM FOR GAS TURBINE ENGINE

Clive Waddington, Stratford; Normand Lagasse, Milford; Charles Kuintzle, Jr., Monroe, and Donald Blake, Trumbull, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 16, 1982, Ser. No. 368,938
Int. Cl.³ F02C 7/06
U.S. Cl. 60—39.08 **12 Claims**



1. Apparatus for directing air through the jets of a bearing and seal oil supply system for a gas turbine engine to purge the oil from the jets into the scavenge conduit of said system, each of said jets having a supply conduit for directing oil to said jet, said apparatus comprising:

a source of pressurized air connected to a first conduit;

a reservoir connected to the first conduit to receive and store a predetermined amount of pressurized air;

an air pressure control valve connected in the first conduit to maintain the air in the reservoir at a predetermined value;

a second conduit connecting the reservoir to the supply conduit of the jet;

a valve means connected in the second conduit to control the flow of pressurized air to the oil supply conduit of the jet, said valve means operatively connected to the oil supply system to close the second conduit when the oil supply system is pressurized and to open the second conduit when the oil pressure in the oil supply system dissipates after shutdown of the gas turbine engine; and

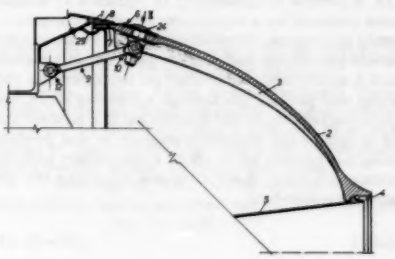
means operatively associated with the valve means to delay the opening of the second conduit for a predetermined period after engine shutdown.

4,452,038

SYSTEM FOR ATTACHING TWO ROTATING PARTS MADE OF MATERIALS HAVING DIFFERENT EXPANSION COEFFICIENTS

Marcel R. Soligny, Chevilly-Larue, France, assignor to S.N.E.C.M.A., Paris, France

Filed Nov. 19, 1982, Ser. No. 443,163
Claims priority, application France, Nov. 19, 1981, 81 21649
Int. Cl.³ F02C 7/20
U.S. Cl. 60—39.31 **11 Claims**



1. An apparatus for attaching an inner exhaust cap formed of a composite material to a metal exhaust housing of a turbojet, said apparatus comprising:

a first cylindrical bearing surface on a radially inner surface of said exhaust housing;

a second cylindrical bearing surface on a radially outer surface of said cap and in cooperating surface contact with said first bearing surface;

at least three rod assemblies circumferentially spaced from one another at positions radially within said cylindrical bearing surfaces;

first attachment means fixed to said housing;

second attachment means fixed to said cap; and

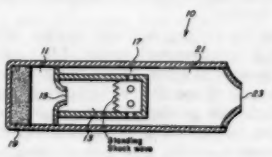
pivot means for pivotally connecting respective ends of said rod assemblies to said first and second attachment means, whereby both radial and axial differential thermal expansions of said housing and said cap are compensated for.

4,452,039

EXPENDABLE INFRARED SOURCE AND METHOD THEREFOR

Harry L. Hodgkins, Upper Marlboro; John K. Reingruber, Waldorf; Kenneth D. Harwell, Tullahoma Tenn. all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1983, Ser. No. 511,351
Int. Cl.³ C06D 5/00
U.S. Cl. 60—207 **16 Claims**



1. An infrared-radiation source for simulating the plume produced by a reactive engine which comprises:

a combustion chamber wherein an energetic composition is reacted to produce a hot, high-pressure product gas, said chamber having a critical exit, thereby enabling the com-

bustion process to be controlled by the rocket motor design;

a supersonic diffuser means in communication through said critical exit with said combustion chamber, whereby the velocity of said product gas is reduced to a subsonic level;

a plenum chamber in communication with said supersonic diffuser means wherein the gas-flow streams of said product gas exiting from said supersonic diffuser means are mixed, said plenum chamber having an exhaust means for exhausting said product gas to the atmosphere.

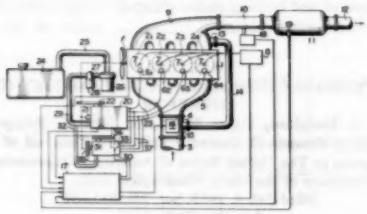
12. A process for generating IR radiation to simulate the plume produced by a reactive engine which comprises: combusting an energetic composition in an enclosure to produce a product gas; exiting said product gas from said enclosure at Mach 1; accelerating said product gas to a supersonic velocity; passing said product gas through a standing shock wave to reduce the velocity of said product gas to a subsonic velocity and to reduce the stagnation pressure of said product gas, mixing said product gas to obtain a substantially uniform temperature and specie distribution, and exhausting said product gas to the atmosphere.

4,452,040

SOOT CATCHER PURGATIVE DIESEL ENGINE FUEL SUPPLY METHOD AND APPARATUS

Kiyoshi Kobashi, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 13, 1981, Ser. No. 321,332
Claims priority, application Japan, Nov. 17, 1980, 55-162135
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—274 **10 Claims**



1. For a diesel engine comprising a cylinder-piston assembly in which a combustion chamber is defined and further comprising a soot catcher,

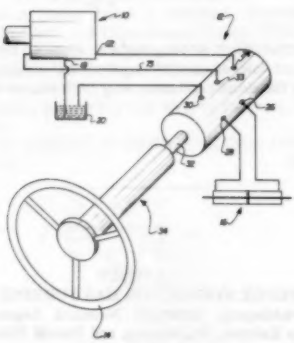
a method for purging said soot catcher while said diesel engine is operating with supply of fuel into said combustion chamber at a first timing point in the conventional diesel cycle of operation of said cylinder-piston assembly at which heat produced by combustion of said fuel is effective for producing rotational power from said cylinder-piston assembly, said method comprising supplying additional fuel into said combustion chamber at a second timing point in the conventional diesel cycle of operation of said cylinder-piston assembly at which point the heat produced by the combustion of said additional fuel has no substantial effect for producing additional rotational power from said cylinder-piston assembly but instead is used to burn off the accumulated soot in the soot catcher.

4,452,041

HYDROSTATIC STEERING SYSTEM WITH DELAYED INPUT TORQUE COLUMN

Jim L. Rau, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 23, 1981, Ser. No. 314,444
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—384 **19 Claims**



1. A load sense hydrostatic steering system for a vehicle comprising

(a) a fluid source,

(b) a steering motor,

(c) a hydrostatic steering controller which is operated by a steering wheel to control flow from the fluid source to the steering motor, said controller including an input member, a metering unit and a control valve, means biasing said control valve to a neutral position in which there is no flow from the source to the steering motor, means connecting said control valve and said metering unit with said input member for moving said control valve away from said neutral position and to an operating position in response to rotation of said input member, said control valve when in said operating position directing flow from said source to said metering unit and directing metered flow from said metering unit to said steering motor,

said controller having means for providing a load sense signal, means for directing said load sense signal toward said source for increasing flow from the source as said control valve moves away from said neutral position,

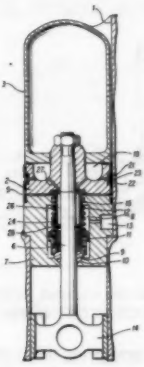
said means connecting said input member with said control valve and said metering unit transmitting a steering load reaction torque to said input member, and

(d) means coupling said input member to the steering wheel for effecting rotation of said input member in response to a steering effort and for absorbing the reaction torque transmitted to said input member when the reaction torque exceeds a predetermined amount, said means coupling said input member to the steering wheel comprising a lost motion connection between said steering wheel and said input member for allowing a limited amount of rotation of said steering wheel with respect to said input member, and spring means which is deflectable by relative rotation of said steering wheel and input member to absorb the reaction torque when the reaction torque exceeds said predetermined amount.

4,452,042
PISTON ROD SEAL

Stefan Lindskoug, Malmö, Sweden, assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,924
Int. Cl.³ F02G 1/04
U.S. Cl. 60—517 4 Claims

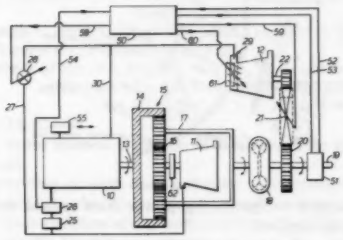


1. A piston rod seal for a double-acting multi-cylinder hot gas engine of the type in which each cylinder contains a piston separating two variable volume chambers and in which each piston is carried by a piston rod which is passed through one of said chambers and a stationary wall limiting said chamber, said piston rod seal being located in said stationary wall and comprising a gland sandwiched between a shoulder surface in said wall and an axially displaceable element, which is resiliently held axially against said gland and mounted in a cavity in said stationary wall, characterised in that said piston carries a sleeve surrounding said piston rod and extending axially through such distance as to axially partly overlap said gland in its position corresponding to the minimum volume of the variable volume chamber through which the piston rod is passed.

4,452,043
DIFFERENTIAL COMPOUND ENGINE

Frank J. Wallace, Bath, England, assignor to South Western Industrial Research Limited, Bath, England

Filed Jul. 21, 1981, Ser. No. 285,568
Claims priority, application United Kingdom, Jul. 22, 1980, 8023962
Int. Cl.³ F02B 37/00
U.S. Cl. 60—600 9 Claims

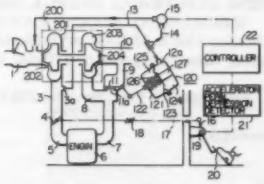


1. A compound power unit, comprising a reciprocating internal combustion engine, a main output shaft, an exhaust turbine driven by the exhaust gases from said engine, said turbine including adjustable inlet nozzles and mechanism for adjusting the angle thereof, a super-charging compressor supplying air under pressure to the air intake of said engine, and a differential transmission having an input and two outputs, the input being connected to the crankshaft of said engine, one output connected to the shaft of said compressor, and the other output connected to said main output shaft, and also coupled to the shaft of said turbine, and including a continuously variable transmission between the exhaust turbine and said main output shaft, whereby substantial torque can be produced at said output shaft without overspeeding of said compressor throughout the operating range.

4,452,044
POWER CONTROL SYSTEM FOR A TURBOCHARGED INTERNAL COMBUSTION ENGINE

Kenzi Iwamoto, Nishio; Hisasi Kawai, Toyohashi; Ryuichi Matushiro, Okazaki; Koichi Moriguchi, Nagoya; Nobutaka Mizuno, and Yasuhiro Ikuta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 12, 1982, Ser. No. 367,616
Claims priority, application Japan, Apr. 14, 1981, 56-55958
Int. Cl.³ F02B 37/12
U.S. Cl. 60—600 2 Claims



1. A power control system for a supercharged internal combustion engine comprising;

a supercharger including a turbine impeller rotatably disposed in an exhaust pipe of an engine and driven by exhaust gases discharged from said engine, and a compressor impeller rotatably disposed in an intake pipe of said engine and connected to said turbine impeller so that said compressor impeller is driven by said turbine impeller for compressing air and feeding the compressed air to said engine;

a by-pass pipe connecting an upstream portion of said exhaust pipe and a downstream portion of said exhaust pipe for by-passing said turbine impeller;

an exhaust by-pass valve disposed in said by-pass pipe for controlling the opening degree of said by-pass pipe; and

means for actuating said exhaust by-pass valve in response to a depression of an acceleration pedal of said engine, so as to maintain a compressor outlet pressure at a preset value during a partial load operating range of said engine and to increase said compressor outlet pressure to another preset value higher than said first-mentioned preset value when said engine is operated in a higher load operating range, wherein said actuating means comprises:

a valve actuator having a pressure chamber and a diaphragm displacable in response to the pressure in said pressure chamber, said diaphragm being operatively connected to said exhaust by-pass valve, said valve actuator having a spring for urging said diaphragm in a direction of closing said exhaust by-pass valve;

a pressure pipe connecting said pressure chamber with a portion of said intake pipe downstream of said compressor impeller for supplying the compressed air from said intake pipe to said pressure chamber;

a return pipe connecting said pressure chamber with a portion of said intake pipe upstream of said compressor impeller;

a variable orifice valve disposed in said return pipe for controlling the opening degree of said return pipe;

an acceleration pedal depression detector for detecting a depression degree of said acceleration pedal; and

control means for driving said variable orifice valve in response to a signal from said acceleration pedal depression detector,

said variable orifice valve being closed during the partial load operating range of said engine so that the pressure in said pressure chamber of said valve actuator is maintained at a value equal to the compressor outlet pressure and when the pressure in said pressure chamber exceeds a resisting force of said spring of said valve actuator said exhaust by-pass valve is opened for by-passing a part of exhaust gases from said engine through said by-pass pipe so as to maintain the compressor outlet pressure at said preset value, and

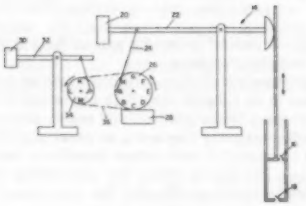
said control means driving said variable orifice valve to open when said engine is operated in the higher load operating range, so as to actuate said exhaust by-pass valve to move in its closing direction in response to the opening degree of said return pipe so that the compressor outlet pressure is increased to said other preset value.

4,452,045

SMOOTHING ELECTRICAL ENERGY OUTPUT WITH MECHANICAL ACCUMULATOR

Ronald W. Matlin; Alan R. Millner, and Frederick W. Sarles, all of Lexington, Mass., assignors to TriSolar Corp., Bedford, Mass.

Filed Apr. 23, 1981, Ser. No. 256,731
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.8 **5 Claims**



1. In combination:

a solar array including a plurality of cells, each said cell directly producing electricity,

said array producing a power output proportional to sunlight intensity,

a device electrically powered by said solar array,

said device consuming power in fluctuating amounts and operating in a fluctuating cyclical manner, and

mechanical energy accumulator means,

said accumulator means cooperating with said device for storage of energy when energy requirements of said device are smaller and delivering energy to said device to supplement energy from said array when energy requirements of said device are higher.

4,452,046

SYSTEM FOR THE OBTAINING OF ENERGY BY FLUID FLOWS RESEMBLING A NATURAL CYCLONE OR ANTI-CYCLONE

Zapata M. Valentin, Lerida No. 3, Madrid-20, Spain

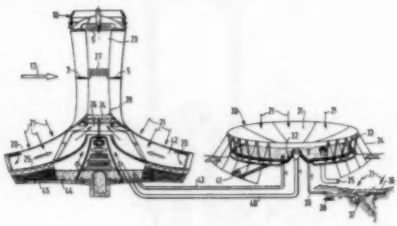
Filed Jul. 8, 1981, Ser. No. 281,503
Claims priority, application Spain, Jul. 24, 1980, 493.713
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.11 **7 Claims**

1. A wind-solar energy conversion system utilising cyclonic or anticyclonic fluid flow comprising:

a cyclonic conversion tower having an axial fluid flow vortex duct;

at least one fluid flow convector arranged vertically in the tower for concentrating lateral wind flow into the tower into axial fluid flow along said vortex duct;

diffuser/deflector means, arranged at one end of the tower, for augmenting fluid flow output;



means, arranged at the top and bottom of the tower, for converting kinetic fluid flow energy into another mode of energy;

a base means for supporting the tower and for admitting solar energy to augment energy output; and

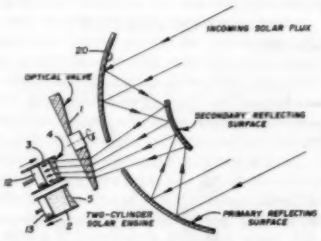
a heating system, arranged in the tower, for augmenting energy output when climatic conditions result in an insufficient supply of solar energy.

4,452,047

RECIPROCATING SOLAR ENGINE

Arlon J. Hunt, 2025 Manzanita Dr., Oakland, Calif. 94611, and Patricia G. Hull, 6600 Rolling Fork Dr., Nashville, Tenn. 37205

Filed Jul. 30, 1982, Ser. No. 403,717
Int. Cl.³ F03G 7/02
U.S. Cl. 60—641.15 **8 Claims**



1. A method for producing power from radiant energy including the steps of:

disbursing radiant energy absorbing particles in a gas stream;

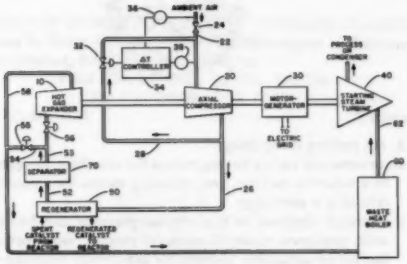
exposing the gas stream and radiant energy absorbing particles to intermittent radiant flux to heat said particles and gas for a portion of the operating cycle;

allowing the heated gas to expand against a reciprocating piston to produce mechanical power.

4,452,048
METHOD AND APPARATUS FOR STARTING AN FCC POWER RECOVERY STRING

Carl H. Geary, Jr., Greensburg, Pa., and Norman A. Samurin, Houston, Tex., assignors to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Division of Ser. No. 267,936, May 28, 1981, Pat. No. 4,399,651. This application May 4, 1983, Ser. No. 491,515
Int. Cl.³ F01K 13/02
U.S. Cl. 60—656 2 Claims



1. Apparatus for reducing the load on the driving means of a constant volume air compressor including:

a constant volume compressor means having an inlet and an outlet;

inlet supply means for supplying ambient air to said inlet of said compressor means;

delivery means for supplying compressed and thereby heated air to a point of use;

bypassing means connecting said delivery means to said inlet supply means for bypassing compressed, heated air from said delivery means to said inlet supply means for raising the temperature of the ambient air supplied to said inlet;

valve means in said bypassing means for controlling the amount of compressed, heated air bypassed to the inlet supply means;

first sensing means for sensing the temperature of the ambient air;

second sensing means for sensing the temperature of the air supplied to said inlet;

control means operatively connected to said first and second sensing means and said valve means for controlling said valve means so as to bypass enough compressed, heated air to raise the temperature of the ambient air supplied to the inlet a predetermined amount.

4,452,049
ICE PRODUCT AND METHOD AND APPARATUS FOR MAKING SAME

Kenneth L. Nelson, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Prospect Heights, Ill.

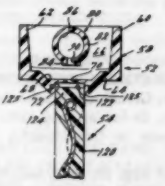
Division of Ser. No. 150,445, May 16, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,854
Int. Cl.³ F25C 1/12, 5/10
U.S. Cl. 62—74 23 Claims

1. In the method of making an ice product, the steps which include,

providing at least one open-sided water receiving recess defined at least in part by a generally concave surface, at least a portion of said surface being defined by a moldable relative heat insulating material,

introducing ice make-up water into said recess and removing heat from said water, and

varying the rate of said heat removal at predetermined portions of said recess by providing said moldable relative heat insulating material at varying thicknesses at said predetermined portions of said recess so as to produce an ice product having a first side generally complementary in

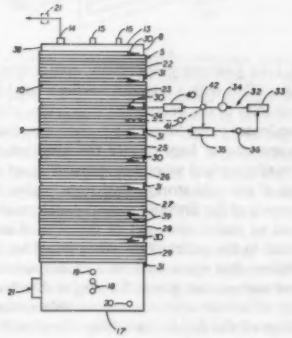


shape to said surface and a second side opposite said first side substantially identical in shape thereto.

4,452,050
ENERGY EFFICIENT WATER HEATING DEVICE AND SYSTEM

Jerry E. Pierce, Shaker Heights, Ohio, assignor to Heat Transfer Engineering, Inc., Elk Grove Village, Ill.

Filed Mar. 14, 1983, Ser. No. 475,199
Int. Cl.³ F25B 41/00; F28F 3/12
U.S. Cl. 62—196.4 12 Claims



1. In combination:

(a) a storage tank comprising an outer peripheral cylindrical steel surface which surrounds an enclosed chamber in which fluid is stored, the chamber, when the tank is in a vertical position, having (i) a closed top in vertical spaced relation above a closed bottom, (ii) a fluid inlet through which fluid enters the bottom of the chamber, and (iii) a fluid outlet through which fluid exits the top of the chamber;

(b) hollow copper tubing coiled around the outer surface of the tank in conformance with the shape thereof between the fluid inlet and outlet, the tubing having a rectangular cross-section, wherein one of the flat sides of the tubing confronts the outer surface of the tank in close proximity thereto, the tubing being divided into a plurality of separate groups of coils through which different fluids can be simultaneously separately circulated, the groups of coils being in vertical spaced relation around the surface, the coils of each group being in close proximity to each other for greater tansfer of thermal energy, each group of coils terminating at a fluid inlet which is vertically spaced above a fluid outlet; and

(c) a thin layer of hardened cement bonded to the outer steel surface of the tank between the surface and copper tubing, the cement being thermally conductive but non-electrolytic reactive to the surface and tubing, the layer of cement being sufficiently thick to prevent an electrolytic reaction between the dissimilar metals of the surface and

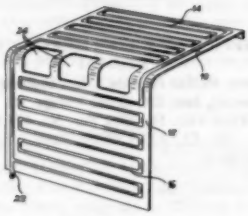
tubing, and sufficiently thin not to adversely effect thermal conductivity between the surface and the tubing.

4,452,051

MODULAR COLD GENERATING APPARATUS

Raymond Berger, Grenoble; Maurice de Cachard, La Tronche; André Gouzy, St-Ismier, and Félix Trombe, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 25, 1981, Ser. No. 296,194
Claims priority, application France, Aug. 27, 1980, 80 18582
Int. Cl.³ F28D 21/00; F25B 23/00; F25D 11/00
U.S. Cl. 62—467 4 Claims



1. A cold generating apparatus, comprising a cold storage enclosure filled with a material having a solid-liquid transition in the vicinity of the operating temperature of the apparatus, a first condenser panel forming a radiating surface, whose radiation drops into at least one of the atmospheric windows, a substantially vertical second evaporator panel immersed in the material of the cold storage enclosure, a pipe in the form of a coil on each of the first and second panels, said pipe having an inlet and an outlet, the inlet of the pipe of each panel being connected to the outlet of the other panel by short and plastically deformable pipes, to form a closed circuit, the planes of said first and second panels forming a dihedral and a certain quantity of a fluid which is vaporizable under the operating conditions of the apparatus within the closed circuit, the assembly constituted by the first and second panels, the closed circuit and the heat transfer fluid forming a single panel device of the heat pipe type serving as a thermal diode which only transmits heat in the direction from the storage enclosure to the radiating surface and having openings in its central part which limits the heat conduction between the condenser panel and the evaporator panel.

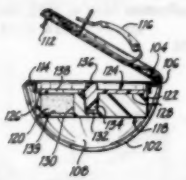
2. A cold generating apparatus, comprising a cold storage enclosure filled with a material having a solid-liquid transition in the vicinity of the operating temperature of the apparatus, a first condenser panel forming a radiating surface, whose radiation drops into at least one of the atmospheric windows, a substantially vertical second evaporator panel immersed in the material of the cold storage enclosure, a pipe in the form of a coil on each of the first and second panels, said pipe having an inlet and an outlet, the inlet of the pipe of each panel being connected to the outlet of the other panel by short and plastically deformable pipes, to form a closed circuit, the planes of said first and second panels forming a dihedral and a certain quantity of a fluid which is vaporizable under the operating conditions of the apparatus within the closed circuit, the assembly constituted by the first and second panels, the closed circuit and the heat transfer fluid forming a device of the heat pipe type serving as a thermal diode which only transmits heat in the direction from the storage enclosure to the radiating surface and also comprising a float beneath the condenser panel and attached along an edge thereof, said float being shaped to position the apparatus in a desired position.

4,452,052

PERFUMING MEANS FOR JEWELRY

Margaret Hodge, 27 E. 65th St., New York, N.Y. 10021

Filed Oct. 9, 1981, Ser. No. 310,031
Int. Cl.³ A44C 13/00
U.S. Cl. 63—1 R 8 Claims



1. An earring comprising:

an ornamental casing having means for attaching the earring to a wearer's earlobe, and retaining means for removably retaining a cartridge;

a cartridge disposed in said retaining means and having a solid perfumed material encased therein, said cartridge having an adjustable opening for selectively exposing said perfumed material to the ambient, which is substantially impervious to the fragrance of said perfumed material when said opening is shut;

said cartridge further including a one-piece base having a depression containing said solid perfumed material, said depression being capable of retaining said perfumed material in its molten state, and a top piece adjustably mounted on said base so as to cover said depression when placed in a closed position and to expose said perfumed material in said depression to the ambient when placed in an open position;

said base being cylindrically shaped, the interior of said cylinder defining a circular arrangement as seen in a plan view along the axis of the cylinder, formed by a C-shaped depression abutting a substantially pie-segment-shaped plateau; and

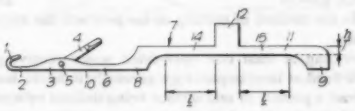
said top piece comprising a circular disc rotatably mounted over said circular arrangement, have an eccentric aperture for exposing said perfumed material to the ambient when said aperture is rotated to a position overlying said depression.

4,452,053

STAMPED KNITTING-TOOL FOR KNITTING MACHINES

Gerhard Egbers, Reutlingen; Bernhard Schuler, Sonnenbühl-Erpfingen; Adolf Seidel, and Günter Bühler, both of Reutlingen, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 38,316, May 11, 1979. This application Aug. 11, 1981, Ser. No. 291,934
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820925
Int. Cl.³ D04B 35/02
U.S. Cl. 66—123 17 Claims



1. A stamped knitting-tool which can be employed in knitting machines and has a head bent like a hook, a shaft having at least one bridge which consists of two guidepieces extending as far as the back of the knitting-needle and a stem arranged

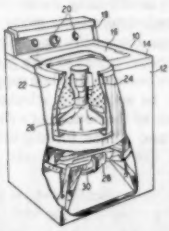
above the back to bridge across the guidepieces, and at least one butt coupled to the shaft in the region of the bridge, where the stem includes at least one first segment arranged between the head and the butt, said tool including means for controlling vibration within the needle and preventing tool breakage at increasing knitting speeds, said means including the shape of said needle which has said first segment (**14, 23, 31,48**) having a length of (l) of at least eight millimeters (8 mm) and a height (h) of at most eleven tenths of a millimeter (1.1 mm).

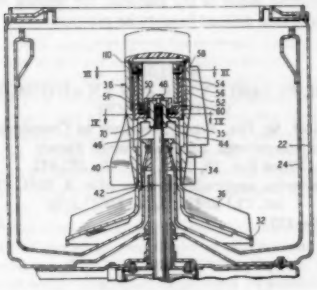
4,452,054

AGITATOR THRUSTER FOR AN AUTOMATIC WASHER

Warren R. Hafstrom, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 12, 1981, Ser. No. 320,736
Int. Cl.³ D06F *17/08, 17/10*
U.S. Cl. 68—133 **7 Claims**





1. In an automatic washer having a basket for receiving clothes to be washed, an agitator means within said basket for agitating the clothes during a wash cycle, said agitator means including an upper portion, and motor means drivingly connected to said agitator, a secondary agitation means mounted on said agitator for enhancing roll-over of said clothes in said basket during agitation, said secondary agitation means comprising:

one-way drive means driven by said motor means;

a driven barrel surrounding said upper portion of said agitator, said driven barrel having vane means on an exterior portion for forcing clothes downwardly along said upper portion of said agitator, said driven barrel further provided with an inner cam surface and an outer cam surface, said cam surfaces arranged for opposite vertical movement of said driven barrel between a first and second position;

a driving barrel drivenly connected to said one-way drive means, a driving pin means carried by said driving barrel, said pin means alternatively engageable with said cam surfaces for driving said driven barrel between said first and second positions;

means on said driven barrel for shifting said driving pin from one of said cam surfaces to the other of said cam surfaces at said first and second positions; and

means provided on said driving barrel for restraining rotational movement of said driven barrel,

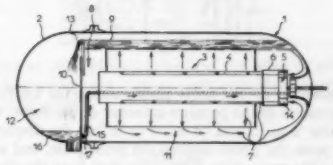
whereby said driven barrel reciprocates vertically about said upper portion of said agitator in an intermittent manner when said agitator is driven in agitation by said motor means.

4,452,055

HORIZONTAL AUTOCLAVE TANK FOR THE TREATMENT OF TEXTILE MATERIALS

Alfred Lejeune, 289 Bois d'Achelles, Tourcoing, and Jean-Claude Dumoulin, 41 rue Lorthiois, 59420 Mouvaux, both of France

Filed Dec. 1, 1982, Ser. No. 445,985
Int. Cl.³ D06B *5/18*
U.S. Cl. 68—189 **12 Claims**



1. Apparatus for the treatment of textile materials, in particular for bleaching or dyeing woven or knitted fabric in rolls or yarn in reels, which comprises a horizontal autoclave tank closed at one end, and a removable cover closing the other end of said tank, a transverse partition near one end of said tank extending up from the bottom of said tank and dividing said tank into a treatment compartment and a closed expansion pressure compartment, said partition having an overflow below the upper wall of said tank defining a liquid level in said treatment compartment below the top of said tank, said expansion compartment receiving excess liquid passing over said overflow from said treatment compartment, a horizontal material holder supported axially in said treatment compartment, a horizontal material holder supported axially in said treatment compartment of the tank, said material holder comprising a perforate cylinder one end of which is closed, circulation pump means in said treatment compartment at the end of said cylinder opposite said closed end for forcing liquid in said tank unidirectionally into said cylinder, whereupon said liquid flows out through material on said holder, and means for returning liquid from said expansion compartment to said treatment compartment.

4,452,056

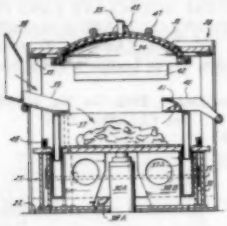
LIQUID EXTRACTING APPARATUS

William C. Files, Destrehan, La., assignor to Pellerin Milnor Corporation, Kenner, La.

Filed Apr. 27, 1983, Ser. No. 489,064
Int. Cl.³ D06F *47/06*
U.S. Cl. 68—242 **5 Claims**

1. Apparatus for use in pressing liquid from cloth goods, comprising a frame, a dome supported by the frame and having a diaphragm across its lower end to form a pressure chamber thereabove, a press plate mounted beneath the dome for vertical reciprocation toward and away from the dome, a sump depending from the press plate for reciprocation therewith and having an open upper end about the periphery of the press plate, a basket mounted for vertical reciprocation within the open upper end of the sump, means for reciprocating the basket between an upper position in which its upper end is above the top side of the press plate, and a lower position in which its upper end is substantially flush with the top side of the press plate, means for raising the press plate from a lower position in which the upper end of the basket, when raised to its upper

position, is spaced beneath the dome to form a container into which a batch of goods may be emptied, to an intermediate position in which the upper end of the raised basket is engaged with the periphery of the diaphragm, and then to an upper position in which the basket is moved downwardly to its lower position in the sump, and the press plate is moved upwardly within the basket to press the goods against the diaphragm, means for releasably locking the press plate to the dome in the



upper position of the press plate, means for applying fluid under pressure to the pressure chamber of the dome, when the press plate is so locked, in order to inflate the diaphragm and further press the goods against the press plate, and means for lowering the press plate, when unlocked from the dome, back to its lower position, and thus lowering the basket with it in order to permit the pressed goods to be moved laterally off the press plate and upper end of the basket.

4,452,057

SHOE MACHINE

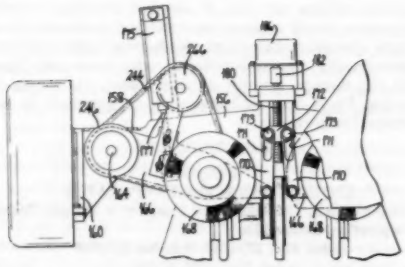
John Davies, Syston; Graham J. Mansfield, Oadby; Kingsley J. Tutt, Birstall, and Frederick J. Graveling, Agleston, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Nov. 1, 1982, Ser. No. 438,520

Claims priority, application United Kingdom, Nov. 13, 1981, 8134214

Int. Cl.³ C14B *1/44*

U.S. Cl. 69—6.5 **19 Claims**



1. A machine suitable for operating progressively along marginal portions of shoe bottoms, comprising:

a shoe support;

a tool carrier;

means for effecting relative movement, both lengthwise and widthwise of the bottom of a shoe supported by the shoe support, between the shoe support and the tool carrier;

means for controlling the heightwise position of the tool carrier relative to the shoe support, as relative lengthwise and widthwise movement is caused to take place therebetween, so that, in an operating mode of the machine, the tool carrier can follow a pre-determined path, determined according to the contour of the shoe bottom being operated upon, relative to the shoe support, a tool carried by the tool carrier can thus be caused to operate progressively along a marginal portion of the bottom of a shoe supported by the shoe support, wherein the tool is mounted on the tool carrier for limited movement relative thereto in a direction extending heightwise relative to the shoe support,

wherein the means for effecting relative lengthwise and widthwise movement between the shoe support and tool carrier comprises first and second numerically controlled motors, and

the means for controlling the heightwise position of the tool carrier relative to the shoe support comprising a third numerically controlled motor, each such motor operating under the control of computer control means by which drive signals are generated and supplied to said motors in accordance with a programmed instruction, including digitized co-ordinate axis values, using three co-ordinate axes, for a plurality of selected points along the marginal portion of the bottom of the or a similar shoe,

and wherein path-determining means is provided which is operable in a path-determining mode of the machine, and which comprises a manually operable control device for causing relative movement to take place along said three co-ordinate axes between the shoe support and tool carrier to bring them to successive selected points along the marginal portion of the bottom of a shoe supported by the shoe support, and means for digitizing, and storing in digitized form, the co-ordinate axis values of each such selected point;

and further wherein resilient means is provided for urging the tool to move relative to the tool carrier in a direction extending heightwise relative to the shoe support into a defined heightwise position in relation to the tool carrier, sensing means also being provided, operable in the path-determining mode of the machine, for sensing when the tool is in said defined heightwise position.

4,452,058

LATCH, IN PARTICULAR FOR AN AUTOMOBILE VEHICLE DOOR

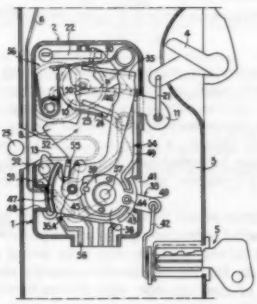
Jean P. Noel, St. Die, France, assignor to Compagnie Industrielle de Mecanismes, Levallois Perret, France

Filed Feb. 26, 1982, Ser. No. 352,612

Claims priority, application France, Mar. 3, 1981, 81 04172

Int. Cl.³ E05B *65/06*; E05C *3/16*

U.S. Cl. 70—137 **8 Claims**



1. A latch, in particular for an automobile vehicle door, said latch comprising a case, a latching mechanism, a locking mechanism associated with the latching mechanism for locking the latching mechanism, an actuating means including an electric motor and associated with the locking mechanism for actuating the locking mechanism, a key, means for connecting the key to the locking mechanism for manually actuating the locking mechanism and means electrically connecting the key to an

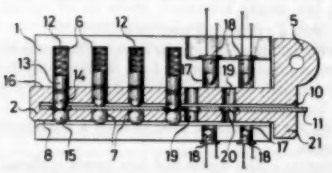
electric circuit for controlling the supply of current to the actuating means, the motor having an output gear which is located in said case and directly drives an element of the locking mechanism, wherein said means for electrically connecting the key to the electric circuit comprises a switching lever for controlling the supply of current to the actuating means, said case carrying a printed circuit and said lever carrying a metal strip which is elastically applied against said printed circuit, wherein the switching lever is also part of said means for connecting the key to the locking mechanism for manually actuating the locking mechanism, wherein the switching lever is connected to said element directly driven by the output gear of the motor through a connection means having a lost motion travel at least in each of the positions for locking and unlocking the locking mechanism.

4,452,059

LOCK APPARATUS

Tor Sornes, Moss, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Jul. 22, 1981, Ser. No. 285,765
Claims priority, application Norway, Aug. 8, 1980, 802386
Int. Cl.³ E05B *25/00, 47/00*
U.S. Cl. 70—278 **10 Claims**



1. In a lock comprising mechanical and electro-optical control means which are selectively controllable:

(a) the mechanical control means comprising a plurality of pins in a housing operable to a disabling position upon insertion into said housing of a card-like code member of a predetermined thickness having a particular pattern of holes therein and operable to an enabling position by insertion into said housing of a second card-like key of the same predetermined thickness having a complementary pattern of holes therein;

(b) the electro-optical control means comprising at least one pair of spaced aligned diodes in said housing, said diodes being in a disenabled position when they are not in alignment with a hole in said card-like code member being in an enabled position only when they are in alignment with a hole in said card-like code member and a hole in said card-like key member.

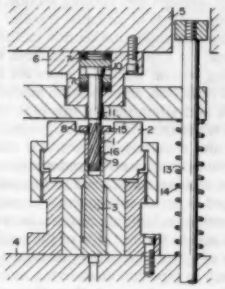
4,452,060

METHOD OF PROCESSING CYLINDRICAL SURFACE

Hisanobu Kanamaru, Katsuta, and Masaharu Oku, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,663
Claims priority, application Japan, Apr. 22, 1981, 56-59824
Int. Cl.³ B21K *21/00*
U.S. Cl. 72—117 **7 Claims**

1. A method of mechanically processing a cylindrical surface of a part having a cylindrical portion, the method comprising the steps of: forming a supporting portion on one end of said cylindrical portion and a stepped cylindrical portion in a portion of said cylindrical surface adjacent said supporting portion, said supporting portion being adapted to be arrested by one of a punch and a die and said stepped cylindrical portion being so arranged that the portion of said cylindrical surface adjacent to said supporting portion is free from being processed; forcing said punch into said cylindrical portion to cause a relative axial movement between said punch and said die fitting around said cylindrical portion; and forming grooves or teeth in said cylindrical surface by a plastic deformation while applying a tension caused by said relative axial



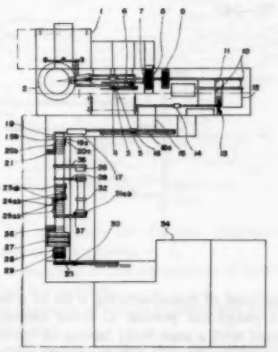
movement to said cylindrical surface, the other of said punch and die being provided with grooves or teeth to perform said deformation work.

4,452,061

SEAMLESS STEEL PIPE MANUFACTURING INSTALLATION

Masachika Numano, Yokosuka, and Shinji Akita, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,806
Claims priority, application Japan, Dec. 16, 1980, 55-176536; Dec. 19, 1980, 55-178813; Dec. 20, 1980, 55-179721; May 18, 1981, 56-74455
Int. Cl.³ B21B *23/00*
U.S. Cl. 72—201 **8 Claims**



1. A manufacturing line for the manufacture of seamless steel pipes as-rolled or heat treated, including a serially arranged heating section, a preliminary treatment section, cooling and heat treating section, straightening and inspection section, and finishing section, said manufacturing line comprising:

means for heating raw material billets;

a preliminary treatment section including a piercing machine, an elongator, a multistand continuous pipe rolling mill, and a sizer which are arranged serially in that order;

a cooling and heat treating section whereby rolled pipes fed thereinto in the axial direction from said rolling line are selectively cooled or heat treated while being transferred transversely, said section including a cooling station and a heat treating station connected in parallel with said cool-

ing station, and means to selectively feed rolled pipes to one of said cooling station and said heating station to selectively provide as-rolled pipes and heat treated pipes, and transfer means to selectively transversely transfer rolled pipes through said cooling section and through said heat treating section at an equal transfer time;

a straightening and inspection section including a straightening machine for straighting pipes from said cooling and heat treating section while the pipes are being transferred in the axial direction, an inspection machine for subjecting pipes from said straightening machine to nondestructive inspection while the pipes are being transferred in the axial direction, and a cutting machine for cutting pipes from said inspection machine in predetermined lengths while the pipes are being transferred in the axial direction, and are arranged in series subsequently to said rolling line;

a finishing section including a continuous transverse transfer line connected to the exit side of the cutting machine and a plurality of types of finishing machines each of a plural number such as pipe end chamfering machines, pipe inner surface cleaners, pipe end threading machines, thread inspection machines, threaded component fitting machines, drift power tighteners, hydrostatic testing machines, measuring and weighing machines, marking machines and coating machines arranged along said transverse transfer line each in a number according to the respective rolling capacity;

said continuous transverse transfer line and subsequent finishing machines arranged between said straightening machine and the exit side of said finishing line and utilized in common for as-rolled pipes and pipes to be heat-treated.

4,452,062

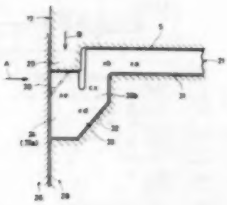
METHOD OF MANUFACTURING BATTERY LID

Morio Ishizaki, Kobe, Japan, assignor to Ishizaki Press Kogyo Co., Ltd., Itami, Japan

Division of Ser. No. 251,539, Apr. 6, 1981, Pat. No. 4,419,420. This application Jan. 18, 1983, Ser. No. 459,034

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—348 **1 Claim**



1. A method of manufacturing a lid of a battery container having a peripheral portion U letter shaped in section for engagement with a main body having an opening edge of said battery container through a packing with said opening edge of said main body of said container curled inward, comprising the steps of:

preparing a blank cut to the size of a lid being obtained;

bending the periphery of said blank in one direction vertical to the surface of said blank to produce a U-shaped periphery; and

pressing the edge of the bent portion of said blank and the central portion of the main flat portion of said blank in the directions toward each other in terms of the direction vertical to the surface of said blank to plastically deform the lower edge of said peripheral portion so that the material at the inner peripheral side at the lower end of said U-shaped periphery is biased toward the outer peripheral edge so as to form on said lower end a horizontal surface facing downward, an oblique surface extending from the inner peripheral edge of said horizontal surface and facing downward and inward, and a vertical surface extending from the outer peripheral edge of said horizontal surface and facing outward.

4,452,063

PROCESS FOR MAKING PIPE FITTING COMPONENTS, AND THE COMPONENTS OBTAINED THEREBY

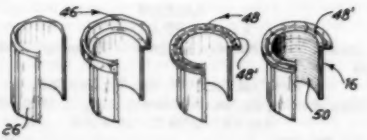
Enrico Sebastiani, 13, Via De Cristoforis, Milan, Italy (I 20124), and Augusto Archi, 16, Via Gramsci, Saronno (Varese), Italy (I 21047)

Filed Sep. 22, 1981, Ser. No. 304,812

Claims priority, application Italy, Sep. 24, 1980, 24878 A/80

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—356 **5 Claims**



1. A process for producing a pipe fitting component, said process comprising:

providing a cylindrical steel tube;

drawing said tube to form the exterior thereof to be of polygonal configuration and to form the thickness thereof to be substantially equal to the desired thickness of a component to be produced;

cutting the thus drawn tube to form a predetermined tube length;

positioning a plug within said tube length in contact with the inner surface thereof;

subjecting an end wall portion of said tube length to axial stress by means of a first die having a region for enabling free radial outward expansion of the material of said tube length, and thereby cold deforming radially outwardly and increasing the diameter of said end wall portion and decreasing the thickness thereof;

subjecting the thus increased diameter end wall portion to axial compression by means of a second die having a region for enabling free expansion of the material of said end wall portion, and thereby axially cold deforming and upsetting said material of said end wall portion to an extent to increase the thickness thereof to the original thickness of said tube length;

removing the thus deformed tube length from said second die and said plug; and

machining at least one surface of said deformed tube length, thereby to result in a pipe fitting component.

4,452,064

CONDUIT BENDER WITH BEND ANGLE INDICATORS

James R. Custin, Elm Grove, Wis., assignor to Gardner Bender, Inc., Milwaukee, Wis.

Filed Nov. 29, 1982, Ser. No. 445,225

Int. Cl.³ B21D *7/14*

U.S. Cl. 72—459 **6 Claims**

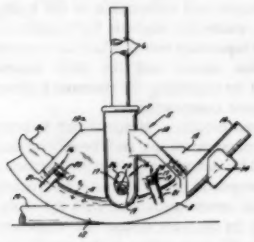
1. A tool for bending conduit and the like, comprising an elongated body having an upwardly opening hook at a front end thereof, having a bottom surface against which conduit engaged by said hook is forced upwardly for bending and which extends rearwardly from said hook along a convex arc and is concavely curved from side to side symmetrically to an upright plane of symmetry, and having an upwardly projecting handle supporting portion that has its axis substantially contained in said plane, said tool being characterized by:

A. said body having

(1) a supporting surface which faces substantially upwardly and is spaced above said bottom surface, and

(2) a straight bore which extends substantially radially to said arc, opens upwardly to said supporting surface and opens downwardly to said bottom surface near said plane and at a location where conduit being bent by the tool comes into engagement with said bottom surface when it has been bent to a predetermined angle,

said supporting surface and said bore being cooperable with an indicator that has a pin-like shank which is longer than said bore and is slidably receivable therein and has a head on an upper end of said shank which can rest on said supporting surface to support the indicator with a lower



end portion of its shank projecting below said bottom surface so that engagement of the conduit with the lower portion of the shank causes the shank to slide upwardly within said bore; and

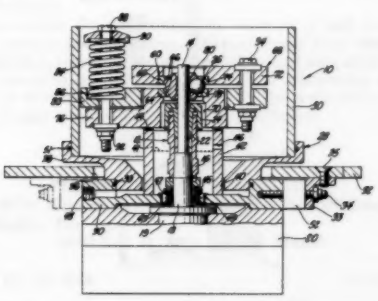
B. said body further having thereon a signalling surface which faces substantially upward and which is spaced radially at a greater distance than said supporting surface from the axis of said bore and is so spaced above said supporting surface that a surface on said head is adjacent to said signalling surface and flush therewith when the lower end of said shank is flush with said bottom surface.

4,452,065

ROLLING CONTACT FATIGUE TEST ASSEMBLY

Marvin J. Minter, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed Aug. 28, 1981, Ser. No. 297,489
Int. Cl.³ G01N 3/56
U.S. Cl. 73—7 **20 Claims**



1. An assembly for measuring the ability of a cylindrical test material specimen (14) to withstand rolling contact fatigue, said assembly comprising mounting means (12) for mounting the cylindrical test material specimen (14), bearing means (26) for rolling contact with the cylindrical test material specimen (14), support means (28) for supporting said mounting means (12) and said bearing means (26) for relative rotation between said mounting means (12) and said bearing means (26), said support means (28) including wedge means (60)in rolling contact with said bearing means (26) for applying an adjustable predetermined and variable force against said bearing means (26) to urge said bearing means (26) into rolling contact with the cylindrical test material specimen (14),

said wedge means (60) including at least one wedge member (62) having a first annular race member (62) disposed about the cylindrical test material specimen (14), said first annular race member (62) including an inclined surface (66) defining a substantially frustoconical inner race surface (66) on said race member (62) and being in rolling engagement with said bearing means (26), said wedge means (60) further including a force-applying means (68) for forcing said inclined surface (66) of said wedge member (62) into wedging engagement with said bearing means (26) to thereby apply a determinable preload between said bearing means (26) and the cylindrical test material specimen (14), and

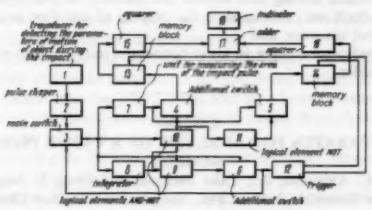
said mounting means (12) including an adjustable collet (22) rotatably supported by said support means (28) for clamping engagement with the cylindrical test material specimen (14).

4,452,066

DEVICE FOR MEASURING DYNAMIC CHARACTERISTICS OF OBJECTS UNDER IMPACT

Viktor A. Klochko, Oktyabrskaya ulitsa, 18, kv. 50; Viktor G. Rygalin, 3 Dorozhny proezd, 5, korpus 2, kv. 103; Dmitry A. Grechinsky, Shipilovsky proezd, 61, korpus 2, kv. 246; Vladimir V. Kljuev, ulitsa Volgina, 44, korpus 13, kv. 69, and Vadim N. Kovalsky, Marksistskaya ulitsa, 9, kv. 307, all of Moscow, U.S.S.R.

PCT No. PCT/SU80/00142, 371 Date Apr. 20, 1982, 102(e) Date Apr. 20, 1982, PCT Pub. No. WO82/00715, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 22, 1980, Ser. No. 375,029
Int. Cl.³ G01N 3/30
U.S. Cl. 73—12 **1 Claim**



1. A device for measuring the dynamic characteristics of objects under impact, comprising:

a transducer responding to the parameters of motion of the object during the impact;

a pulse shaper the input of which is connected to the output of said transducer;

a controlled switch having first and second inputs and an output, said first input of which is connected to the output of said pulse shaper;

a unit with an input and an output and adapted for measuring the area of the impact pulse the input of which is connected to the output of said controlled switch;

an integrator having an input and an output, the input of which is connected to the output of said controlled switch;

a first logical AND-NOT element having first and second inputs and an output, said first input thereof being connected to the output of said controlled switch and said second input being connected to the output of said integrator;

a second logical AND-NOT element having first and second inputs and an output, said first input thereof being con-

nected to the output of said controlled switch and said second input being connected to the output of said integrator;

a logical NOT element having an input connected to the output of said first logical AND-NOT element;

a first additional switch having first and second inputs and an output, said first input thereof being connected to the output of said unit for measuring the area of the impact pulse and said second input thereof being connected to the output of said first logical AND-NOT element;

a second additional switch having a first input, a second input and an output, said first input thereof being connected to the output of said unit for measuring the area of the impact pulse and said second input thereof being connected to the output of said logical NOT element;

a third additional switch having first and second inputs and an output, said first input thereof being connected to the output of said controlled switch and said second input thereof being connected to the output of said second logical AND-NOT element, and said output thereof being connected to the second input of said controlled switch;

a first memory block having first and second inputs and an output, one of said inputs of which is connected to the output of said first additional switch;

a second memory block having first and second inputs and an output, one of said inputs of which is connected to the output of said second additional switch;

a trigger having an input and first and second outputs, said input of which is connected to the output of said third additional switch and the first output of which is connected to the second input of said first memory block and the second output of which is connected to the second input of said second memory block;

a first squarer having an input and an output, the input of which is connected to the output of said first memory block;

a second squarer having an input and an output, the input of which is connected to the output of said second memory block;

an adder having two inputs and an output, the inputs of which are connected to the outputs of said first and second squarers; and

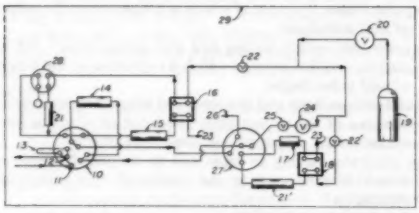
an indicator having an input connected to the output of said adder.

4,452,067

APPARATUS FOR ANALYSIS OF A VAPOR PHASE SAMPLE

Ross C. Ahlstrom, Jr., Lake Jackson, and Craig E. Meppen, New Braunfels, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1982, Ser. No. 412,699
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **13 Claims**



1. A system for analyzing a vapor phase sample containing non-condensable and condensable components, containing a mixture of hydrogen, oxides of carbon, water, aliphatic hydrocarbons and aromatic hydrocarbons, the system comprising:

(a) a sample injection means;

(b) a first separation means which connects into the sample injection means, and the first separation means is adapted for separating the hydrogen, oxides of carbon, water and aliphatic hydrocarbons from the aromatic hydrocarbons;

(c) a second separation means which is connected into the first separation means, and the second separation means is adapted for separating the hydrogen, oxides of carbon, water and aliphatic hydrocarbons into the constituent elements and compounds;

(d) a first detection means which is connected into the second separating means, and the first detection means is adapted for determining the concentration of the constituent elements and compounds in the hydrogen, oxides of carbon, water and aliphatic hydrocarbons;

(e) a third separation means which is connected into the first separation means, and the third separation means is adapted for separating the aromatic hydrocarbons into the constituent compounds;

(f) a second detection means which is connected into the third separation means, and the second detection means is adapted for determining the concentration of each constituent compound of the aromatic hydrocarbon; and

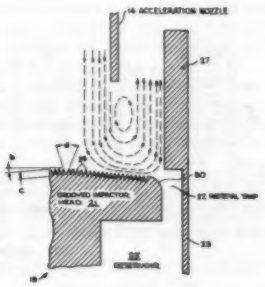
(g) a heater means associated with the analyzer system, for holding the analyzer system at a temperature sufficient to maintain all components of the sample in a vapor phase.

4,452,068

GROOVED IMPACTOR AND INERTIAL TRAP FOR SAMPLING INHALABLE PARTICULATE MATTER

Billy W. Loo, Oakland, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 23, 1982, Ser. No. 351,389
Int. Cl.³ G01N *15/02*
U.S. Cl. 73—28 **12 Claims**



1. In an inhalable particulate sampler having at least an inlet section and a particle-size separator section, the improvement comprising: means for substantially preventing particle bounce and reentrainment of particles over a selected maximum size, comprising a particle impactor, said impactor being provided with a surface onto which substantially all incoming particles are initially directed, said impactor surface having a plurality of V-shaped grooves thereon, and means which includes said particle impactor for forming an inertial trap adjacent a peripheral area of said particle impactor whereby particles greater than a selected maximum size are trapped by said inertial trap.

4,452,069

METHOD OF AND APPARATUS FOR SENSING KNOCKING IN INTERNAL COMBUSTION ENGINE

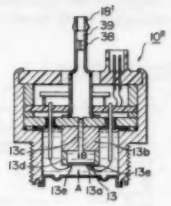
Tadashi Hattori, Okazaki; Masanori Hanaoka; Yukihide Hashiguchi, both of Toyota; Yoshinori Ootsuka, Okazaki, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 28, 1981, Ser. No. 335,283

Claims priority, application Japan, Dec. 26, 1980, 55-186271; Dec. 26, 1980, 55-186272

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 1 Claim



1. An apparatus for sensing a knocking taking place in an internal combustion engine comprising;

a housing attached to a portion of an internal combustion engine suitable for sensing a knocking;

a first diaphragm fixed to an end of said housing and exposed to a cooling water or a lubricating oil of said engine for responding to a composite pressure of a static component and a pulsative component of said cooling water or lubricating oil;

a first fluid chamber defined by at least by said first diaphragm and a part of said housing for holding therein an incompressible fluid;

a pressure sensing means disposed in said housing and including a second diaphragm, one side of said second diaphragm being exposed to said first fluid chamber and being contacted with said incompressible fluid, said pressure sensing means forming therein a second fluid chamber by at least the other side of said second diaphragm;

a pressure sensing element attached to said second diaphragm;

pipe means for transmitting the pressure of said cooling water or said lubricating oil to said second fluid chamber;

pulsation removing means disposed in said pipe means for removing said pulsative component of said cooling water or lubricating oil and applying only the static component to said other side of said second diaphragm.

4,452,070

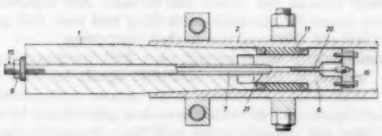
TESTING CASING CONNECTORS

Robert M. Kipp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 22, 1981, Ser. No. 333,493

Int. Cl.³ G01M *3/02*

U.S. Cl. 73—49.8 10 Claims



1. Apparatus for sealing and tensioning a tube, comprising, a first plug insertable into one end of the tube, a circumferentially threaded portion of the first plug engageable with a correspondingly threaded portion inside the tube and functional to grip the end of the tube, a compressible packing ring for sealing the end of the tube, a rod axially entendable through the first plug and connected to a second plug which extends at least partly past the packing ring, the rod being tensionable to axially pull the second plug toward the first plug and compress the packing ring between the two plugs into a sealing mode, and a borehole in the rod for injecting pressurized fluid through the rod and into the tube.

4,452,071

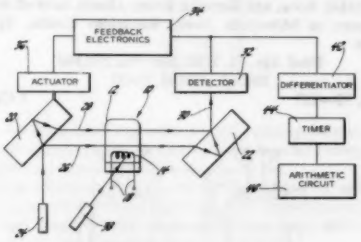
MEASUREMENT OF FILL GAS PRESSURE IN LIGHT BULBS

Gary L. Eesley, Lake Orion; Jeffrey C. Buchholz, Detroit, and Jeffery A. Sell, Huntington Wood, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1982, Ser. No. 443,198

Int. Cl.³ G01N *29/00*; G01M *3/02*

U.S. Cl. 73—52 3 Claims



1. The method of measuring the fill gas pressure in a light bulb having a transparent envelope, comprising the steps of:

thermally generating a shock wave in the fill gas at a source within the bulb which wave travels from the source at the speed of sound in the gas, the speed of the shock wave depending on the fill gas pressure,

optically detecting the passage of the shock wave through two loci in the bulb, one of the loci being further from the source than the other of the loci by a known distance so that the shock wave successively passes through the two loci,

measuring the time of travel of the shock wave between the two loci, and

determining from the known distance and the time of travel the fill gas pressure for the bulb.

4,452,072

COMBUSTION CONDITION SENSOR

Eckart Damson, Stuttgart; Winfried Moser, Markgroningen, and Franz Rieger, Aalen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,696

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1981, 3139837

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 10 Claims

1. Combustion condition sensor to obtain an optical signal representative of combustion events in a combustion chamber, particularly a combustion chamber of an internal combustion engine having

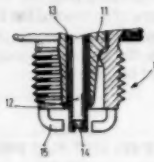
a tubular housing (**10, 11**) formed with an opening therethrough, and including means sealing the housing in the chamber,

and a light transmissive light guide element (**12**) fitted in the opening located therein;

and comprising, in accordance with the invention

an end element (**14**) separating the combustion chamber

from the light guide element to protect the light guide element from high combustion temperature consisting of a



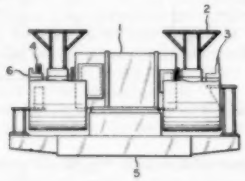
high temperature resistant light transmitting disc-like element (14).

4,452,073

CHASSIS DYNAMOMETER

Tsugio Sekii, Kobe, and Kensaku Jinbo, Akashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,546
Int. Cl.³ G01M 15/00
U.S. Cl. 73—117 7 Claims



1. A chassis dynamometer comprising:
a bed;
a dynamo mounted on said bed, said dynamo having extending from opposite lateral sides thereof oppositely directed end portions of a dynamo shaft;
a pair of drums, each said drum being snugly fitted to a respective said end portion of said dynamo shaft;
a disc of a disc brake fitted to a first said end portion of said dynamo shaft at a position axially outwardly of the fitting of the respective said drum to said first end portion; and
a coupling joint fitted to a second said end portion of said dynamo shaft at a position axially outwardly of the fitting of the respective said drum to said second end portion.

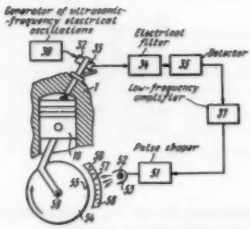
4,452,074

METHOD OF AND APPARATUS FOR MONITORING THE PERFORMANCE OF INTERNAL COMBUSTION ENGINE MECHANISMS

Timofei I. Shelomentsev, Leninsky prospekt, 91, kv. 71; Vladimir A. Konstantinov, ulitsa Kazintsa, 76, kv. 610; Evgeny V. Yakubovich, ulitsa Asanalieva, 7, kv. 217; Fedor F. Bratsky, ulitsa Tikotskogo, 42, kv. 119; Leonid I. Geraschenko, ulitsa Gurtieva, 18, kv. 38; Olga P. Shevchuk, ulitsa Vasnetsova, 37, kv. 2; Alexandr N. Murashko, ulitsa Gorkogo, 143, kv. 50; Vasily I. Lutsky, Krasnozvezdnaya ulitsa, 1-a, kv. 22; Vladimir P. Nekrashevich, ulitsa Glebki, 84, kv. 75; Alexandr M. Boglov, ulitsa Gurtieva, 12, kv. 10; Valery P. Muraviev, ulitsa Ya Mavra, 18, kv. 159; Evgeny L. Shildkrot, ulitsa Vaneeva, 20, kv. 53, all of Minsk, and Vladimir A. Scherbatjuk, ulitsa Stroitelei, 11, kv. 50, Molodechno, all of U.S.S.R.

Filed Jul. 22, 1982, Ser. No. 400,679
Int. Cl.³ G01M 15/00
U.S. Cl. 73—119 A 30 Claims

1. A method of monitoring the performance of the mechanisms of an internal combustion engine incorporating a cylinder with a piston, an injector and a fuel pump, comprising the following steps:
applying continuous artificial ultrasonic mechanical oscillations across the body of a mechanism being monitored to the chosen moving element of said mechanism,
receiving and converting into an electrical signal the ultrasonic mechanical oscillations arriving from said moving element of said mechanism being monitored, arising from the interaction of said artificial ultrasonic mechanical oscillations with moving element and modulated as a consequence of the motion performed by said moving element,
said steps of receiving and converting being accomplished by a means for receiving and converting arranged on the body of said mechanism being monitored,



isolating a band of frequencies of said electrical signal with a carrier frequency equal to the frequency of said artificial ultrasonic mechanical oscillations,
detecting said isolated carrier frequency of said electrical signal to obtain its low-frequency modulating component characterizing the motion of said moving element in relation to said body of said mechanism being monitored and representing an intelligence signal,
measuring the spectral-time parameters of said ultrasonic mechanical oscillations received from said moving element accomplished by means of processing said intelligence signal, and
determining the required performance characteristics of said mechanism being monitored on the basis of said measured parameters.

4,452,075

PUSH DRILL GUIDANCE INDICATION APPARATUS

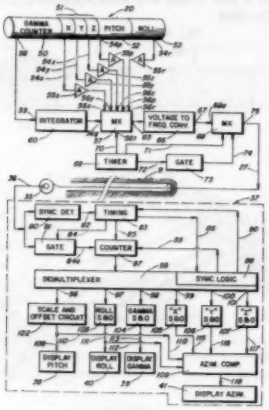
Rhea W. Bockhorst, Morgantown, W. Va., and Jimmie H. Elenburg, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 89,008, Oct. 29, 1979. This application Sep. 24, 1982, Ser. No. 422,572
Int. Cl.³ G01V 1/40; E21B 47/02
U.S. Cl. 73—151 3 Claims

1. Push drill guidance apparatus for remotely controlling position and attitude of a push drill within an earth borehole, said push drill carrying a plurality of sensors providing data outputs of gamma count, X, Y and Z axis orientation, pitch and roll of the push drill, such data outputs being conducted to a remote control unit which also includes data indicators and drive means for manually controlling said push drill position and attitude, the apparatus further comprising:
multiplexing means at said push drill for generating time sequential, frequency indicative signals for each of said sensors for transmission to the remote control unit;
microprocessor means at the remote control unit for receiving and demultiplexing said time sequential signals to compute and provide output and display of the plural sensor data outputs;
non-volatile random access memory means addressably coacting with said microprocessor means storing sensor parameter data for each of said sensors;

a keep-alive voltage source continually energizing said random access memory means; and

means enabled in calibrate mode to activate calibrate program of said microprocessor means whereby the sensor



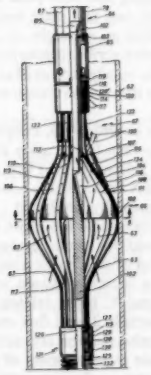
parameters for each sensor in each of a plurality of prescribed push drill attitudes is re-calibrated and the updated sensor parameters are stored in said random access memory means.

4,452,076

WELL LOGGING TOOL

Alain H. Gavignet, and Walter E. Cubberly, Jr., both of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 21, 1982, Ser. No. 390,377
Int. Cl.³ E21B *21/08*
U.S. Cl. 73—155 **23 Claims**



1. A well-logging tool, for use within a well borehole for measuring a characteristic of a flowing fluid therein, comprising:

a housing;

means for measuring a characteristic of the flowing fluid, the means for measuring being disposed within the housing;

means for sealing the annulus between the well borehole and the housing and for directing the flowing fluid into the housing; and

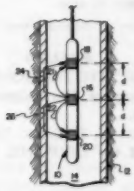
selective bypass means for directing a portion of the flowing fluid prevented by said sealing and directing means from flowing through said annulus, to bypass the housing upon the flowing fluid exerting a predetermined pressure force upon the sealing and directing means, whereby damage to the sealing and directing means from increased pressure forces is minimized and fluid characteristics of fluids having widely varying flow rates may be measured.

4,452,077

BOREHOLE ULTRASONIC FLOW METER

Robert W. Siegfried, II, Frisco, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 19, 1982, Ser. No. 399,548
Int. Cl.³ E21B *47/10*
U.S. Cl. 73—155 **6 Claims**



1. An ultrasonic flow meter for determining the rate of fluid flow at various depths in intervals of a borehole comprising:

(a) a tool moveable within said borehole;

(b) an ultrasonic signal transmitter mounted on said tool;

(c) a pair of ultrasonic signal receivers mounted on said tool and longitudinally spaced equidistant from said transmitter on opposite sides thereof;

(d) means for energizing said transmitter in a pulse mode, the difference in travel time of the resultant signal propagating through the borehole fluid between the transmitter and each of the two receivers, respectively, constituting a measure of fluid velocity relative to said tool; and

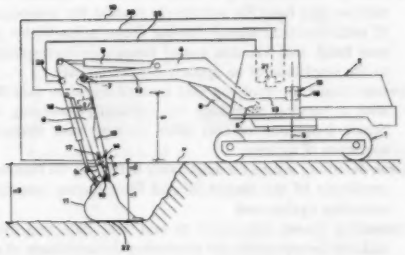
(e) means for calculating the relative velocity of the tool and the borehole casing by detecting the doppler shift between the frequency of the transmitted signal and the signal detected at either receiver after reflection from said casing.

4,452,078

DEVICE FOR CHECKING THE DEPTH REACHED BY A DIGGING OPERATION

Jiri Formanek, and Rune Nilsson, both of Hofors, Sweden, assignors to Eurotrade Machine Pool Aktiebolag, Stockholm, Sweden

Filed May 20, 1982, Ser. No. 380,064
Claims priority, application Sweden, Jun. 18, 1981, 8103846-5
Int. Cl.³ G01C *5/00*
U.S. Cl. 73—432 HA **5 Claims**



1. A device for checking the depth reached by operation of

a digging machine including a digging implement arranged on an arm pivotably supported relative to the machine comprising:

a fluid-filled conduit associated with the arm and extending between a first sensor located on the arm and a first location on the machine separated from the arm;

wherein said first sensor delivers information corresponding to the height of the fluid-filled conduit above a predetermined reference level;

a second sensor for delivering information as to the inclination of the arm; and

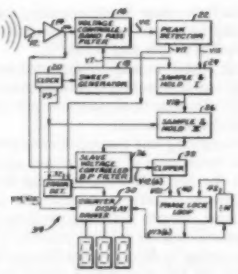
a processing unit for automatically processing information received from said first and second sensors and calculating the difference in altitude between said first location on the machine or a set reference position and a position on the digging implement or arm.

4,452,079

ACOUSTIC TACHOMETER

Charles R. Tiller, Glenview, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 27, 1982, Ser. No. 424,090
Int. Cl.³ G01P *3/02, 3/42*
U.S. Cl. 73—488 **17 Claims**



1. Apparatus for measuring the operating speed of a device, said device producing sound waves having components at a number of frequencies, wherein the frequency at which the sound waves are of maximum amplitude is systematically related to said operating speed, said frequency of said maximum occurring in a frequency spectrum of interest which is systematically related to a predetermined range of operating speeds, said apparatus comprising

transducer means responsive to said sound waves for producing systematically related electrical signals;

a band-pass filter having a variable center frequency and a narrow pass band for selectively passing the components of said electrical signals having frequencies within said pass band, said variable center frequency corresponding to the amplitude of an applied control signal;

sweep means for applying said control signal to said filter with a varying amplitude for cyclically sweeping said center frequency of said filter through said frequency spectrum of interest;

peak detecting means for selectively detecting the maximum amplitude of the output of said filter during respective sweeping cycles; and

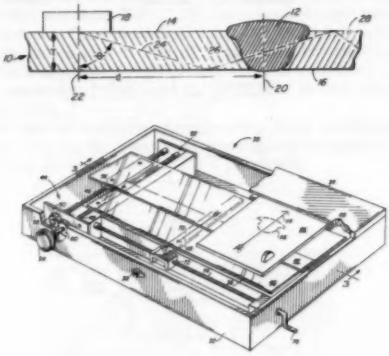
measuring means responsive to said peak detecting means and said sweep means for measuring the amplitude of said control signal when said peak detecting means detects said maximum amplitude, thereby providing an indication of said operating speed.

4,452,080

CALCULATING APPARATUS AND METHOD

William W. McFarland, 4405 Pagoda, Hutchinson, Kans. 67501

Filed Sep. 28, 1982, Ser. No. 425,403
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—588 **28 Claims**



1. Apparatus for determining the location of an internal defect in a test specimen of relatively uniform thickness, said defect being detected by the echoed reflection of a sound wave introduced into the test specimen at a known entry point on a reference surface thereof extending in a first direction, and at a known acute angle θ relative to a second direction perpendicular to said first direction, said apparatus comprising:

a housing;

a base plate secured to said housing and having a base line thereon extending in said first direction, a first scale extending in said first direction with an origin representing said known entry point and with indicia thereon in a coordinate X′, a second scale extending in said second direction with indicia thereon in a coordinate Y, and a first skip line emanating relative to said origin at said angle θ;

a first plate overlying said base plate and adjustable in said second direction, said first plate having a second skip line thereon extending at an angle of $180°-\theta$, and further having a first index scribe registering with and settable on said second scale by adjustment of said first plate to locate said second skip line in correlation to said thickness of the test specimen;

indicia means in a coordinate X cooperating with said first and second skip lines for locating the position of the detected defect in relation to said first and second skip lines, said coordinates X and X′ being related to one another by a factor of substantially sin θ; and

a first cursor overlying said first plate and adjustable in said first direction, said first cursor having thereon a display of the configuration of said test specimen in coordinates X′ and Y′ and at a location related to said base line, said coordinates Y and Y′ being related to one another by a factor of substantially 2, said first cursor further having a second index scribe thereon registering with and settable on said first scale by adjustment of said cursor to locate said display of the configuration of the test specimen in correlation to said origin.

4,452,081

MEASUREMENT OF VELOCITY AND TISSUE TEMPERATURE BY ULTRASOUND

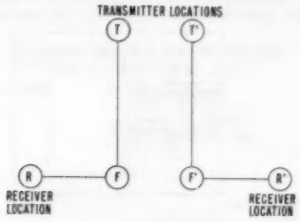
Edward J. Seppi, Menlo Park, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 30, 1982, Ser. No. 429,579
Int. Cl.³ G01N *29/00*; G01K *11/22*
U.S. Cl. 73—597 **11 Claims**

1. A method of determining the velocity of sound between

two field positions F and F' inside a medium which occupies a region including the space between said field positions, said method comprising the steps of

transmitting a first incident sound beam and a second incident sound beam directed respectively towards said two field positions,



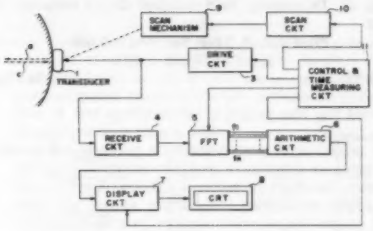
preselecting two receiver positions R and R' on opposite sides with respect to both said incident beams, and

detecting for each of said instant beams two scattered sound beams traveling respectively along lines FR and F'R'.

4,452,082
ULTRASONIC MEASURING METHOD

Hirohide Miwa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 28, 1982, Ser. No. 372,547
Claims priority, application Japan, Apr. 30, 1981, 56-65536
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **9 Claims**



5. An ultrasonic object measuring method, comprising the steps of:

(a) transmitting an ultrasonic pulse;

(b) sampling reflected waves at predetermined time intervals;

(c) calculating a power spectrum of each of the reflected waves;

(d) determining a center frequency of the power spectrum for each of the reflected waves; and

(e) determining an attenuation slope as a function of time based on the center frequency of each of the sampled reflected waves.

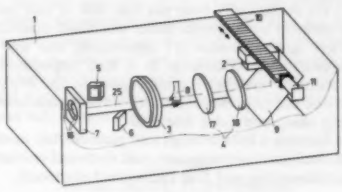
4,452,083
ULTRASONIC DIAGNOSIS DEVICE

Hans Brettel, Munich; Wolfgang Dietz, Eching; Ulrich Röder, Munich; Christof Scherg, Munich, and Wilhelm Waidelich, Munich, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen- und Umweltforschung mbH, Neuherberg, Fed. Rep. of Germany

Filed Aug. 3, 1982, Ser. No. 404,910
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135053
Int. Cl.³ G01N *29/00*; A61B *6/00*
U.S. Cl. 73—607 **11 Claims**

1. In an ultrasonic diagnosis device composed of ultrasonic optical elements arranged to be disposed in a mass of fluid in a container together with the object to be examined in order to image the object in an image plane, a source of incoherent sound radiation for irradiating the object, a condenser lens, an imaging objective and an acoustic energy detector system, the improvement wherein:

said incoherent sound radiation source comprises a turbulence chamber containing a plurality of particles arranged to move essentially randomly relative to one another, and at least one ultrasonic transmitter for irradiating the particles in said turbulence chamber with coherent ultrasound;



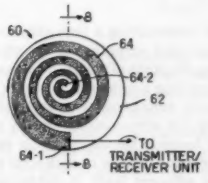
said imaging objective comprises at least two individual lenses of homogeneous material which are arranged in symmetry to one another and each having one lens face which faces the other said lens and which has an aspherical shape; and

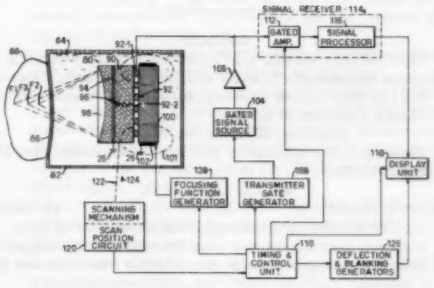
said detector system comprises a linear array of detectors for converting the resulting ultrasound image of the object into electrical signals, and means for periodically moving the detectors across the image plane.

4,452,084
INHERENT DELAY LINE ULTRASONIC TRANSDUCER AND SYSTEMS

Jon C. Taenzer, Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Oct. 25, 1982, Ser. No. 436,446
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—609 **16 Claims**





1. An ultrasonic transmitting and/or receiving transducer for generating and/or receiving compressional acoustic waves

for use in ultrasonic examination of an object, said transducer comprising,

a piezoelectric member having first and second opposite faces,

first and second electrode means disposed on said first and second faces, respectively,

at least one of said electrode means being in the form of an elongated strip conductor which, together with the other of said electrode means comprises a delay line for inherent delay in the propagation of electromagnetic waves therealong through distributed capacitance and inductance of the delay line,

means for acoustically coupling one face of said piezoelectric member to an object under ultrasonic examination,

electrical resistor means for terminating one end of the elongated strip conductor in a load impedance which substantially matches the impedance of the delay line at said one end to prevent standing wave signals from developing along said delay line, and

means forming a hole through said piezoelectric member for said electrical resistor means, said electrical resistor means interconnecting said first and second electrodes.

4,452,085

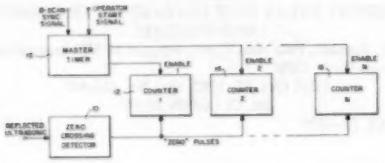
METHOD AND MEANS FOR GENERATING TIME GAIN COMPENSATION CONTROL SIGNAL FOR USE IN ULTRASONIC SCANNER AND THE LIKE

Norbert J. Pelc, and Stephen W. Flax, both of Waukesha, Wis., assignors to General Electric Company, Rancho Cordova, Calif.

Filed Apr. 19, 1982, Ser. No. 369,370

Int. Cl.³ G01N *29/00*; A61B *10/00*

U.S. Cl. 73—631 **1 Claim**



1. A method of constructing a time gain control signal for a time gain compensated amplifier in an ultrasonic scanning system comprising the steps of transmitting an ultrasonic wave into an object, receiving a reflected ultrasonic signal from said object, detecting the zero crossing of said reflected ultrasonic wave, determining the zero crossing density of said ultrasonic wave at different levels in the object under examination, comparing the zero crossing density at each level to the zero crossing density at an adjacent level to determine the ultrasonic attenuation therebetween, and constructing a time gain control signal based on said attenuation.

4,452,086

ELECTRODYNAMIC ULTRASONIC TRANSFORMER

Gerhard Hüschelrath, Laufach, and Karl Laudenbach, Giessen, both of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 312,977

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042645

Int. Cl.³ G01N *29/00*

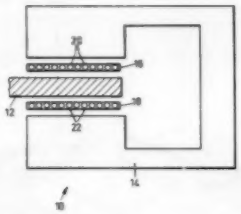
U.S. Cl. 73—643 **11 Claims**

1. An electrodynamic ultrasonic transformer comprising:

a magnet yoke having two poles for establishing a magnetic field between said poles into which a test piece can be placed;

an exciting coil positioned between one of said poles and the test piece; and

a receiving coil positioned between the test piece and other pole, the exciting and receiving coils having portions serving as current conductors fabricated from an electrical resistance-type material which during an exciting current flow does not substantially impede current flow in



the exciting coil and which after excitation, rapidly dissipates energy stored in stray and coupling fields, the exciting and receiving coil portions being formed from different resistance materials, respectively.

4,452,087

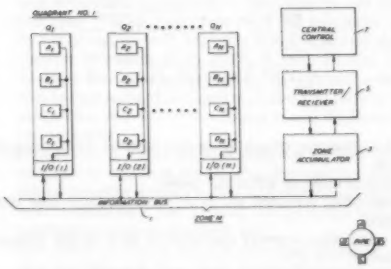
PIPELINE MONITORING SYSTEM

Nicholas F. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088

Filed Apr. 5, 1982, Ser. No. 365,600

Int. Cl.³ G01M *5/00*

U.S. Cl. 73—786 **36 Claims**



1. A system for monitoring a pipeline for stress-related characteristics, said system comprising:

a plurality of sets of sensing means connectable to a pipeline at different locations along the pipeline for sensing applied stresses and for acquiring electrical characteristics reflective of the values of the applied stresses;

first measuring means electrically connectable to the respective sensing means to generate electrical signals reflective of the values of the applied stresses

second measuring means electrically connectable to the respective sets of sensing means, to generate electrical output signals reflective of the relative values of the applied stresses in sensing means in at least two of said sets of sensing means to indicate the stress gradient between the locations of at least two sets of sensing means; and

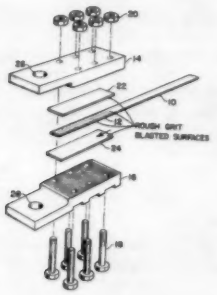
computation means for evaluating the signals generated by said first and second measuring means.

4,452,088

METHOD AND APPARATUS FOR GRIPPING UNIAXIAL FIBROUS COMPOSITE MATERIALS

John D. Whittenberger, North Olmsted, and Frances I. Hurwitz, Shaker Heights, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,139
Int. Cl.³ G01N 3/04, 3/08
U.S. Cl. 73—856 5 Claims



1. An apparatus for tensile testing a composite material specimen having oppositely disposed surfaces grit blasted to a predetermined roughness on each end portion thereof, an improved gripping means comprising

a pair of spaced grip members adjacent to each of said end portions of said specimen, each of said grip members facing one of said grit blasted surfaces,

a load transfer member between each of said grip members and said specimen, said load transfer member having a face grit blasted to substantially the same roughness as said predetermined roughness of the surfaces on the end portion of said specimen for engaging said grit blasted surfaces on said specimen, and

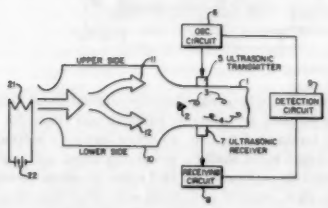
means for applying a predetermined compressive force to said grip members sufficient to maintain each grit blasted face of each transfer member in frictional engagement with the mating grit blasted surface on said specimen without fracturing said specimen during testing.

4,452,089

KÁRMÁN'S VORTEX STREET CURRENT METER

Shunichi Wada, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 224,508, filed as PCT JP 80/00094, May 2, 1980, published as WO81/01877, Jul 9, 1981, § 102(e) Dec. 9, 1980. abandoned, This application May 27, 1982, Ser. No. 382,791
Claims priority, application Japan, Dec. 29, 1979, 54-172736
Int. Cl.³ G01F 1/32
U.S. Cl. 73—861.23 5 Claims



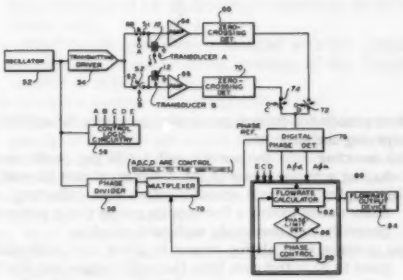
1. A Kármán's vortex street current meter comprising: a conduit having a vortex generating strut extending horizontally thereacross substantially perpendicular to the direction of flow of a stream of fluid through said conduit; convection producing means upstream of said strut for causing the less dense portion of the fluid flowing in the conduit to rise and flow along the upper part of the conduit and the more dense portion to flow along the lower part of the conduit and constituted by an introduction portion of said conduit disposed upstream of said vortex generating strut and sufficiently long for permitting convection in the fluid flowing in the conduit to cause the warmer portion of the fluid to rise and flow along the upper part of the conduit and the cooler portion to flow along the lower part of the conduit; means for changing the temperature of the fluid upstream of said introduction portion; and vortex detection means downstream of said strut and including an ultrasonic transmitter at the upper part of the conduit for propagating an ultrasonic wave across the Kármán's vortex street generated downstream of said generating strut, and an ultrasonic receiver positioned oppositely to said transmitter on the lower side of said conduit.

4,452,090

ULTRASONIC FLOWMETER

Abraham H. Kou; Michael G. Busby, both of Madison; Errol E. Polenske, Sun Prairie, and Wilfried R. Peickert, Madison, all of Wis., assignors to Airco, Inc., Montvale, N.J.

Filed May 17, 1982, Ser. No. 379,240
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 5 Claims



1. An ultrasonic flowmeter comprising:

a pair of transducers mounted about a conduit carrying a gas coaxially aligned at a predetermined spacing apart and at an angle with respect to the direction of flow of the gas;

means to activate one of said transducers at a predetermined frequency to generate an ultrasonic signal in a direction upstream of the flow of gas and received by the other of said transducers;

means to activate the other of said transducers at a predetermined frequency to generate an ultrasonic signal in a direction downstream of the flow of gas and received by the one of said transducers;

means to establish a phase reference based upon the activation of the generation of the ultrasonic signal;

means to compare the received ultrasonic signals with said phase reference to determine a phase angle of ultrasonic signals travelling in both the upstream and downstream directions and to produce a signal indicative of the flow velocity of the gas based upon the difference in detected phase angles;

means to compute the average of the detected phase angles of the ultrasonic signals traveling in both the upstream and downstream directions;

means to sense the approach of the averaged phase angle to a predetermined limit and to shift the phase reference to a new value to prevent the averaged phase angle from reaching the predetermined limit;

means to memorize the amount of shift in phase reference

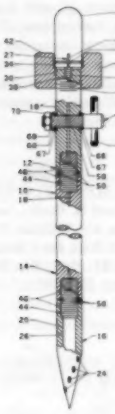
and to use the same in producing the signal indicative of flow velocity.

4,452,091

SOIL GAS PROBE

David M. Richers, Glenpool, Okla., assignor to Cities Service Company, Tulsa, Okla.

Filed Jun. 23, 1982, Ser. No. 391,253
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—864.52 **10 Claims**



8. A process for collecting sample gases from the earth's soil comprising the steps of:

(a) inserting into the earth's soil a soil gas probe means having a recess means in the upper most part thereof;

(b) coupling into said recess means a first collecting container means having a first septum means that is punctured generally simultaneously with said coupling;

(c) opening a regulating means to allow any contaminant gases to be withdrawn from the probe means into the first collecting container means while simultaneously allowing gases from the soil to be withdrawn into the probe means;

(d) closing the regulating means;

(e) uncoupling the first collecting container means from said recess means;

(f) coupling into said recess a second collecting container means having a second septum means that is punctured generally simultaneously with said coupling; and

(g) opening the regulating means to allow the soil gases from the probe means to be withdrawn into the second collecting container means.

4,452,092

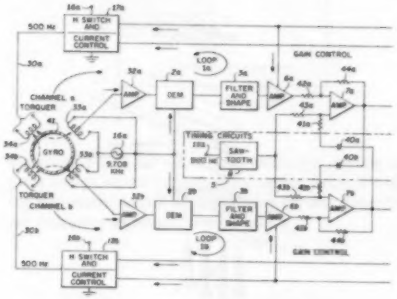
TORQUE FEEDBACK CONTROL FOR TWO DEGREE OF FREEDOM RATE SENSOR

Rudolf C. Dankwurt, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,613
Int. Cl.³ G01C *19/30*
U.S. Cl. 74—5.46 **6 Claims**

1. In a gyroscopic reference system for navigable craft including at least one torque rebalanced, two-degree-of-freedom gyroscope comprising a free rotor adapted to spin about a spin axis and to freely tilt about a pair of mutually perpendicular sensing axes normal to said spin axis in response to turning motion of said craft, pick-off coil means having an a.c. reference source connected thereto and coupled with said rotor for detecting rotor tilt about said sensing axes and supplying corresponding a.c. electric signals in accordance therewith, and torquer coil means also coupled with said rotor for imparting torques thereto in accordance with a.c. electric currents proportional to said pick-off signals for reducing said pick-off signals to zero whereby said torquer currents are proportional to said craft turning motion; apparatus for compensating for any electromagnetic coupling between the torquer coils effective about adjacent axes comprising,

pulse width control means including comparator means responsive to said pick-off signals and a sawtooth reference voltage for supplying corresponding substantially



rectangular wave current pulse trains to respective ones of said torquer coil means, each of said square waves of said pulse trains having one edge thereof variable in time of occurrence in accordance with the amplitude of said pick-off signals, and

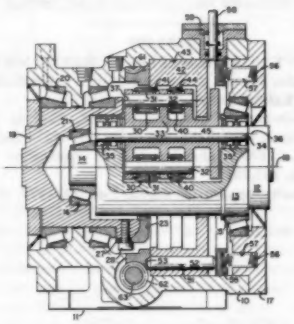
circuit means responsive to each of said comparator means for preventing said time varying one edge of said respective square wave pulse trains from substantially coinciding.

4,452,093

DRIVE UNIT

Rome R. Rudolph, deceased, late of Gibsonia, Pa. by Kathleen Rudolph, executrix, 4113 Lee Rd., Gibsonia, Pa. 15044

Filed Sep. 3, 1981, Ser. No. 298,932
Int. Cl.³ F16H *27/04*
U.S. Cl. 74—84 R **14 Claims**



9. A drive unit comprising coaxially-aligned input and output shafts, a housing to rotatably support said shafts for rotation about a common first axis, an arbor having a second axis supported by said input shaft for revolving about said common first axis, a carrier supported by said arbor to rotate about said second axis, first, second and third sets of rollers rotatably supported by said carrier, the rollers of each set being rotatably about roller axes spaced from said second axis, cam means supported by said housing for engagement by said second and third sets of rollers to control rotation of said output shaft, and

an array of spaced-apart wedges supported to drive said output shaft by continuous rolling contact with a plurality of the rollers of said first set of rollers, each of said wedges having tapered side surfaces diverging radially of said common first axis for said continuous rolling contact, said wedges being radially situated from said common first axis and spaced from one another to always entrap a plurality of rollers of said first set of rollers with a plurality of said wedges by said continuous rolling contact.

4,452,094

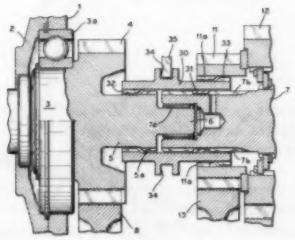
OVERDRIVE TRANSMISSION FOR AUTOMOTIVE VEHICLES

Thomas C. Schetter, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 50,877, Jun. 21, 1979, abandoned. This application Apr. 19, 1982, Ser. No. 369,508

Int. Cl.³ F16H *3/08*; F16D *11/12*

U.S. Cl. 74—333 **2 Claims**



1. A clutching mechanism for an automotive transmission comprising, in combination, an input shaft having an end and defining an axis, an output shaft having an end and disposed coaxially with said axis, said ends of said shafts disposed in generally abutting relationship, an annular array of circumferentially-spaced externally-extending splines disposed on said input shaft adjacent said end and having an outside diameter larger than the diameter of said input shaft, an annular array of circumferentially-spaced externally-extending splines disposed on said output shaft, an annular gear disposed for rotation about said output shaft and said axis, said annular gear including an annular array of circumferentially-spaced internally-extending splines disposed more proximate said end of said output shaft and defining a region having an inside diameter larger than the inside diameter of said internal splines, an elongate annular clutch element disposed for rotation about said axis and translation along said axis among a first position, a second position and a third position, said element including a first annular array of circumferentially-spaced internally-extending spline means for engaging said annular array of external splines disposed on said output shaft in said first, second and third positions, a second annular array of circumferentially-spaced internally-extending spline means disposed on said clutch element for engaging said external splines disposed on said input shaft only in said third position, a region between said arrays of internal spline means having an inside diameter larger than the inside diameter of said second array of internal spline means, an annular array of circumferentially-spaced externally-extending spline means disposed on said clutch element for engaging said internal splines disposed on said annular gear only in said first position and a region adjacent said external spline means having an outside diameter less than the outside diameter of said external spline means and means for effecting selective axial translation of said clutch element among said first position, said second position and said third position, whereby direct drive is achieved between said input shaft and said output shaft in said third position of said clutch element.

4,452,095

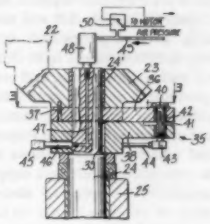
OVERLOAD PROTECTION FOR METAL FORMING MACHINE

Donald A. Roy, Waterbury, and Albert M. Garms, Oakville, both of Conn., assignors to Waterbury Farrel Div. of Textron, Inc., Providence, R.I.

Filed Mar. 4, 1982, Ser. No. 354,542

Int. Cl.³ F16H *57/00, 1/02*

U.S. Cl. 74—412 TA **7 Claims**



1. In an article forming machine having a drive train comprising driven means for forming articles, and a drive means connected with the driven means to drive the driven means, the improvement comprising:

a frangible member in the drive train adapted to break upon the occurrence of a predetermined overload in the driven means; and

signalling means operatively associated with the frangible member and operative upon breaking of the frangible member to stop the machine;

the frangible member comprising a shear pin;

the signalling means comprising a dead-end fluid pressure passage in the shear pin, means supplying fluid pressure to said passage, a fluid pressure responsive switch connected with the fluid pressure passage and adapted to be actuated by a change in pressure when the passage is ruptured upon breakage of the shear pin;

the fluid responsive switch being operatively connected with the drive means of the machine to stop the machine when the shear pin is broken.

4,452,096

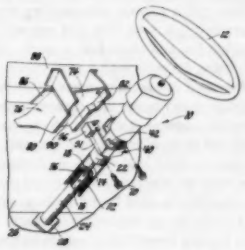
ENERGY ABSORBING STEERING COLUMN AND CAPSULE MOUNTING THEREFORE

Michael J. Workman, Sunfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1981, Ser. No. 294,452

Int. Cl.³ B62D *1/18*

U.S. Cl. 74—492 **3 Claims**



1. A telescopically collapsible steering column for an automotive vehicle comprising a steering shaft operatively connected between a vehicle steering gear at a lower end thereof

and a manually operated steering wheel at the upper end thereof, a support jacket disposed around said steering shaft, said column having energy absorbing means therein for dissipating energy as said jacket and said shaft are telescopically collapsed on application of a force of predetermined magnitude to said steering wheel, a column support fixed within said vehicle, attachment means operatively mounting said jacket to said support, said attachment means comprising capsule means and cooperating vertically extending threaded fastener means fastening said capsule means to said support, said jacket having a bracket secured thereto, said bracket and said capsule means having cooperating vertically oriented upper and lower tongue and groove retention means tight-fitting and laterally offset to one side of said anchor means, said tongue and groove retention means provides a multiple point attachment of said column to said vehicle for optimized column mounting stiffness and minimized column vibration in response to operation of said vehicle and which slidably releases said bracket and said column from connection with said support so that said column can telescopically collapse and absorb energy in response to application of an impact load on said steering column, said column support having spaced side walls outboard of said bracket forming an elongated guide channel which guides said bracket and said steering column in a predetermined path as said column is telescopically collapsed to optimize operation of said energy absorbing means.

4,452,097

TUBULAR WINDOW DRIVE MECHANISM PARTICULARLY FOR MOTOR VEHICLES

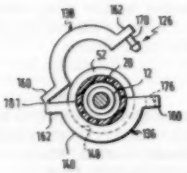
Manfred Sünkel, Sonnefeld, Fed. Rep. of Germany, assignor to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Coburg, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 386,990

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 8120936[U]

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501 R **8 Claims**



1. A tubular window driving mechanism particularly for motor vehicles comprising: a driving cable for driving a window; a first tube and a second tube having said driving cable extending therethrough, said first and second tubes being arranged with adjoining ends attached to each other, said adjoining ends each being formed with a radially outwardly extending flared collar; and connecting means attaching said adjoining ends together; said connecting means comprising a plastic clamping member consisting of two clamp halves adapted to receive said flared ends of said tubes therebetween and to be clipped together to hold said tubes, said clamp halves being each provided with an inner circumferential groove for receiving therein, respectively, said flared collars; said clamp halves being formed each by an essentially hollow semicylindrical center portion having longitudinal edges extending parallel to a cylinder axis of said semicylindrical portion with a radially outwardly projecting lateral flange being provided on each of said edges, with each of said flanges being arranged for contact with a corresponding flange formed on the other of said clamp halves; said two clamp halves being connected together by means of a flexible connecting strip having a relatively thin configuration and arranged in the region of the outer edges of two of said adjacent lateral flanges.

4,452,098

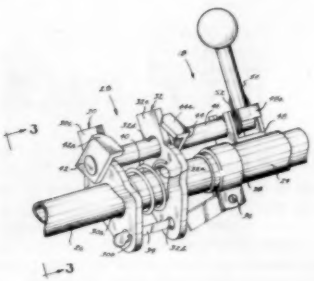
LOCKING AND POSITIONING DEVICE FOR RECLINING SEATS

John B. Wallace, and Charles G. Pearson, both of Andrews, Ind., assignors to General Engineering & Manufacturing Corp., Andrews, Ind.

Filed Jul. 2, 1982, Ser. No. 394,497

Int. Cl.³ G05G *5/06*; A47C *1/02*

U.S. Cl. 74—531 **2 Claims**



1. In a locking and positioning device, comprising:

(a) first and second telescoping members adapted for longitudinal movement relative to one another;

(b) gripping means operatively mounted on said first member and moveable to a first position in frictional gripping engagement with said second member for militating against relative longitudinal movement between said first and said second members and to a second position for allowing relative longitudinal movement between said first and said second members, said gripping means including a pair of washers adapted to be spread apart for frictionally gripping said second member in the first position, each said washer includes a portion engageable with said second member;

(c) a fulcrum arm pivotally mounted on said first member, said washers being mounted on said fulcrum arm for movement relative thereto;

(d) means disposed between said pair of washers for biasing said pair of washers apart in the first position, said biasing means including a spring surrounding said second member and operatively disposed between said washers; and

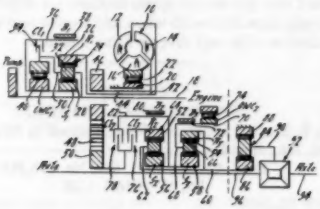
(e) means for compressing said pair of washers together in the second position for releasing said second member from said first member whereby said second member may be positioned and retained in any various extended telescope positions relative to said first member, said means for compressing said washers together includes actuatable control means mounted on said first member and engageable with washers for releasing said washers from gripping engagement with said second member, a shaft extending through each washer and a pair of spaced cam members fixedly mounted on said shaft for movement therewith, said pair of cam members containing said pair of washers therebetween and in operative engagement therewith so as to compress said washers upon rotation of said shaft.

4,452,099

THREE SPEED OVERDRIVE TRANSAXLE ASSEMBLY

Howard L. Croswhite, Thousand Oaks, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 17, 1981, Ser. No. 293,549
Int. Cl.[3] F16H 37/08, 47/00, 57/10
U.S. Cl. 74—695 4 Claims



1. An overdrive transaxle driveline for an automotive vehicle having an internal combustion engine mounted with its principal axis in a transverse direction relative to the fore-and-aft axis of the vehicle;

a hydrokinetic torque converter and an overdrive gear unit mounted on a first transverse axis and multiple ratio planetary gearing mounted on a second transverse axis parallel to the first transverse axis;

a final drive gear unit and differential assembly;

a first axle shaft extending concentrically through said main gearing and connected to one output element of said differential assembly;

a second axle shaft aligned with said first axle shaft and connected to another output element of said differential assembly;

an engine driven shaft extending concentrically through the torque converter;

a transfer drive having a driving element located between said overdrive gear unit and said converter and mounted for rotation about the axis of said engine driven shaft, said transfer drive having a driven element mounted for rotation about the axis of said main gearing;

said overdrive gear unit comprising a ring gear member, a sun gear member, a carrier member and planet pinions journalled on said carrier member in meshing engagement with said sun and ring gear members;

said converter having an impeller connected to said ring gear through a sleeve shaft extending through said driving element;

said converter having a turbine connected to said driving element through a turbine sleeve shaft extending concentrically through said converter; and

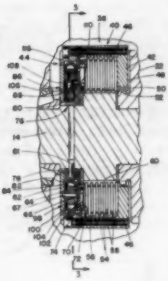
clutch and brake means for selectively anchoring the sun gear member of said overdrive gear unit and for clutching two members of said overdrive gear unit together said clutch and brake means comprising a friction brake member connected to the sun gear of said overdrive gear unit, a friction clutch located between two members of said overdrive gear unit to render the overdrive gear unit inactive and to allow a direct driving connection between said engine driven shaft and the said impeller, and an overrunning clutch between said two members of said overdrive gear unit whereby said ring gear of said overdrive gear unit is overdriven when said friction brake member is braked as said overrunning clutch overruns.

4,452,100

DIFFERENTIAL SPEED LIMITING DEVICE

William C. Sullivan, Newark, Ohio, and Spencer M. Nimberger, Houston, Tex., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 28, 1981, Ser. No. 306,028
Int. Cl.[3] F16H 1/44; F16D 11/06
U.S. Cl. 74—711 23 Claims



1. A differential speed limiting device for limiting the relative rotational speed between a first member and a second member capable of independent rotation about a common axis of rotation, said differential speed limiting device comprising:

first and second friction disc means respectively mounted for rotation with said first and said second members and capable of being compressed axially to generate frictional contact therebetween tending to reduce said relative rotational speed between said first and said second members;

an annular pump housing mounted for rotation with said first member;

an annular bellows means mounted on said pump housing and having an extended end aligned with said first and said second friction disc means, said extended end being capable of axial movement toward and away from said first and said second friction disc means when fluid under pressure is respectively supplied to and discharged from an interior of said bellows means;

said pump housing having an interior cylindrical surface located therein;

a length of collapsible tubing means having a first end and a second end and being formed into a single loop about said interior cylindrical surface, said loop lying in a plane which is normal to said common axis;

planetary roller means mounted in said plane for rotation with said second member and in frictional surface contact with said tubing means, said roller means being of such radial dimensions as to compress said tubing means against said interior cylindrical surface in a region of said contact;

a reservoir for said fluid in said pump housing;

a first passage means for said fluid between said reservoir and said first end of said tubing means;

a second passage means for said fluid between said second end of said tubing means and said interior of said bellows means;

said second member rotating in a first direction relative to said first member causing said roller means to circumferentially travel along said tubing means from said first end to said second end to produce peristaltic pumping of said fluid from said reservoir through said first passage means, said tubing means, and said second passage means to said interior of said bellows means to produce said pressure of said fluid therein; and

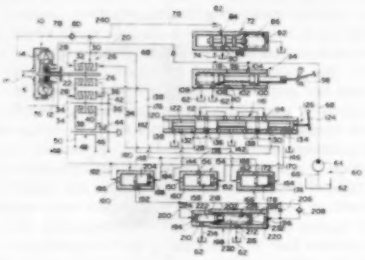
means for discharging said fluid from said interior of said bellows means to said reservoir to relieve said pressure of said fluid in said interior of said bellows means when there is no rotation of said second member relative to said first member.

4,452,101

TRANSMISSION FOR A WORKING VEHICLE

Kazuyoshi Fujioka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 1, 1981, Ser. No. 250,004
Claims priority, application Japan, Apr. 10, 1980, 55-47750
Int. Cl.³ F16H *47/00*
U.S. Cl. 74—733 **6 Claims**



1. A power transmission for a working vehicle having an engine comprising:

a torque converter to be driven by an output of said engine and provided a torque corresponding to the engine output torque;

a transmission gear assembly having forward and reverse drive gears and first and second speed gears and shiftable between first, second, third, fourth and fifth gear positions, said transmission gear assembly operative to place the vehicle in a neutral position in said first gear position, in a forward, first speed gear position in said second gear position, in a forward, second speed gear position in said third gear position, in a reverse, first speed gear position in said fourth gear position and in a reverse, second speed gear position in said fifth gear position;

a driving means to be driven by said transmission gear assembly in said first, second, third, fourth and fifth gear positions and transmitting the engine output torque to driving wheels;

a clutch assembly shiftable in first, second, third, fourth and fifth clutch positions for establishing connection between said transmission gear assembly and said driving means in said first gear position in said second clutch position, in said third gear position in said third clutch position, in said fourth gear position in said fourth clutch position and in said fifth gear position in said fifth clutch position;

said clutch assembly comprising a forward drive clutch, reverse drive clutch, first speed clutch and second speed clutch, said forward and reverse speed clutches cooperating with said torque converter and said first and second speed clutches cooperating with said driving means, said forward and reverse speed clutches and said first and second speed clutches being operatively positioned opposing said forward and reverse drive gears and said first and second speed gears respectively, of said transmission gear assembly for respectively shifting between a connected position and a released position with respect to said opposing transmission gears;

a hydraulic circuit operative by a single shift lever and shifting said clutch assembly into said first, second, third, fourth and fifth clutch positions corresponding to the shift lever position;

said hydraulic circuit including a first valve means mechanically connected with said shift lever, and selectively establishing communication between a fluid source and said clutch assembly for shifting the clutch position between said first, second, third, fourth and fifth clutch positions; and

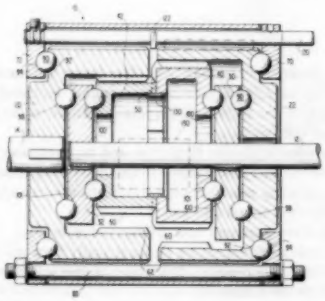
said first valve means having first, second, third, fourth, fifth and sixth ports respectively connected to said forward and reverse drive clutches and said first and second speed clutches, said first and second ports respectively connected to said forward and reverse drive clutches for establishing fluid communication therewith in accordance with said shift lever positions, said third and fourth ports respectively connected to said first and second speed clutches for establishing fluid communication therewith when said first port is in communication with said forward drive clutch in accordance with the shift lever position, and said fifth and sixth ports respectively connected to said first and second speed clutches for establishing communication therewith when said second port is in communication with said reverse drive clutch.

4,452,102

EPICYCLOIDAL GEARING

James E. Shaffer, Longmont, Colo., assignor to New Age Industries, Inc., Boulder, Colo.

Filed Apr. 23, 1981, Ser. No. 256,285
Int. Cl.³ F16H *1/28*
U.S. Cl. 74—801 **14 Claims**



1. An epicyclic gear train, comprising:

input and output means;

first and second orbiting gears;

first and second eccentric members coupled to said input for orbitably driving said orbiting gears and counterbalancing imbalance forces caused by said orbiting gears;

first and second outer gears meshingly engaged with said first and second orbiting gears, respectively;

means for selectively braking either of said outer gears; and

bearing means for supporting said orbiting gears for orbiting and rotating motion, said bearing means including first races formed in confronting axial surfaces of said first orbiting gear and said first eccentric member as well as said second orbiting gear and said second eccentric member, respectively, and rollers guided in said first races.

4,452,103

TWIN CAM INDEX DRIVE

Michael E. Lijewski, Westland, and George Zeissler, Sterling Heights, both of Mich., assignors to Expert Automation, Inc., Sterling Heights, Mich.

Filed Dec. 7, 1981, Ser. No. 328,066
Int. Cl.³ B23B *29/24*; B23Q *17/00*
U.S. Cl. 74—817 **21 Claims**

1. An index drive apparatus comprising:

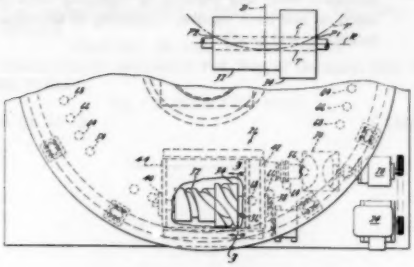
movable work supporting means having a work supporting surface associated therewith;

a plurality of primary cam followers secured in spaced relationship to said movable work supporting means;

a plurality of secondary cam followers secured to said work supporting means in spaced relationship and in alignment with said primary cam follower means;

cam means having a primary cam portion and a secondary cam portion; and

means for driving said cam means whereby successive ones of said primary cam followers engage said primary and



secondary cam portions and successive ones of said secondary cam followers engage only said secondary cam portion to index said movable work supporting means between successive work stations.

4,452,104

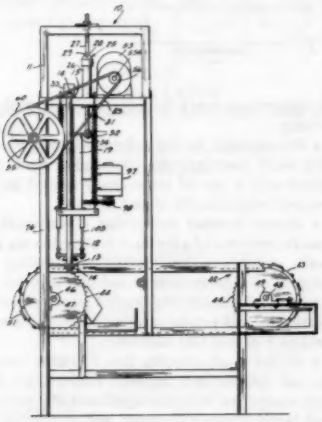
MULTI SEQUENCE PROCESSING APPARATUS EQUIPPED WITH FAIL SAFE INDEXING MECHANISM

James E. Altman, 105 Altman Rd., Gray, Ga. 31032

Continuation-in-part of Ser. No. 958,177, Nov. 6, 1978, abandoned. This application Feb. 8, 1982, Ser. No. 346,655

Int. Cl.³ B23B *29/24*

U.S. Cl. 74—822 **6 Claims**



1. Processing apparatus comprising:

(A) stationary frame means,

(B) a motor means having a continuously driven power shaft supported on said frame means,

(C) a first subassembly guided for longitudinal movement along a portion of said frame means, said first subassembly including a plurality of preselected portions longitudinally arranged relative to one another therealong,

(D) a second subassembly assembly guided for vertical movement along another poriton of said frame means,

(E) a stop and go drive means for said first subassembly which is driven by a crank means rotatably powered by said power shaft, with said first subassembly being intermittently advanced along said frame portion for positioning at a predetermined stop position a said preselected portion of said first subassembly,

(F) a fluid drive means for moving said second subassembly toward a predetermined position relationship with each of said preselected portions when such has been advanced into said predetermined stop position, said fluid drive means including actuation control means having means for actuating said control means, and

(G) a fail safe regulating means responsive to said predetermined stop position for each said preselected portion, said regulating means allowing actuation of said means for actuating said control means to occur only when said stop and go drive means has advanced each said predetermined portion to said predetermined stop position.

4,452,105

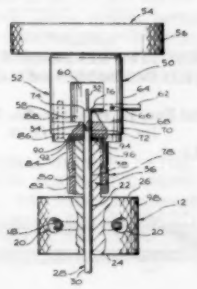
SELF-FEEDING CABLE STRIPPER

Aramais Harootion, Northridge, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Nov. 4, 1982, Ser. No. 439,102

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 R **10 Claims**



1. An improved self-feeding cable stripper, said stripper comprising, in combination:

a. a base having a cable-receiving opening extending therethrough and clamping means for adjustably clamping a cable in said opening;

b. a cylinder secured to and projecting from said base, said cylinder having a central cable-receiving opening aligned with said base opening, the exterior surface of said cylinder bearing threads on the distal portion thereof;

c. a fitting threadably secured to said cylinder so as to disengage from said threads when said fitting approximates said base, said fitting having a central cable-receiving opening aligned with said cylinder opening; and,

d. a cutter mounted in said fitting for rotation therewith, said cutter including a cutter blade adjustably intersecting said fitting opening for cutting sheathing of a cable, when in said openings in a spiral pattern as said cutter is rotated toward said base, and in a squared edge pattern when said fitting is rotated around and disengages from said cylinder adjacent said base.

4,452,106

TOOL HAVING ARTICULATED OPPOSING JAWS

John A. Tartaglia, 108 Stoddard Rd., Waterbury, Conn. 06708

Filed Jan. 22, 1982, Ser. No. 341,906

Int. Cl.³ B25B *9/02*; A61B *17/28, 17/30*

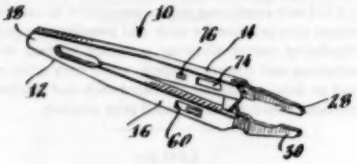
U.S. Cl. 81—43 **17 Claims**

1. A tool having articulated opposing jaws comprising:

first and second opposing arms projecting from a section by which said arms are joined, said arms being normally spaced throughout their length and being resiliently flexible toward each other, each said arm including an elongate cavity extending longitudinally of said arm and having an opening at the end of said arm;

first and second jaw inserts respectively for said first and second arms, each jaw insert having a working end and an

elongate shank received by its respective cavity, each said jaw insert being formed of sheet material of generally uniform thickness, said working ends being movable toward each other upon flexing of said arms toward each other; said first jaw insert including a portion intermediate



said working end and said shank, said intermediate portion including a tab protruding inwardly there from into the space between said arms; and said second arm including a guide slot receiving the tab on the first jaw insert and confining movement of said first jaw insert in generally planar relation to said second arm.

4,452,107

RATCHET-TYPE REVERSIBLE WRENCH

Shimon Waiser, P.O. Box 360 Midwood Station, Brooklyn, N.Y. 11230

Filed Dec. 17, 1981, Ser. No. 331,667
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—63.2 **7 Claims**

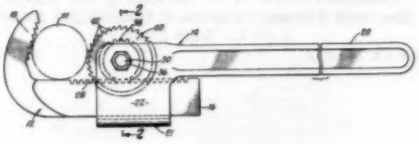
1. A ratchet-type reversible wrench comprising:
a handle conforming to the hand of the operator and which is grasped by the operator's hand;
an outer housing member surrounding an inner member and rotatable relative to the latter;
said inner member supplied with means connecting with a nut to turn the latter;
means for rotating said inner member relative to said outer housing member;
said rotating means including a plurality of engaging teeth provided on said inner member and at least one engaging formation located in said outer housing member, so that when said outer housing member is rotated relative to said inner member in one circumferential direction said inner member and thereby a nut connected to the latter are rotated, whereas when said outer housing member is rotated in another circumferential direction said inner member and thereby the nut connected to the latter do not rotate;
switching means located on said handle to reverse direction of rotation of said inner member;
special effort transmissive means including an effort transferring element which transfers effort from said handle to said engaging formation located in said outer housing member to engage and disengage said formation with said plurality of engaging teeth provided on said inner member depending on direction of turning of said handle;
the handle characterized in that:
a. said handle is pivotally mounted on said outer housing member thus that said handle performs a limited transverse counter motion relatively to said outer housing member during working cycle;
b. on said handle is located said switching means, said switching means including at least two elements one of which is a switching knob located on said handle and the second one is an effort direction changing cam which is located inside of the handle and which acts upon said effort transferring element which in its turn influences on said engaging formation located in said outer housing member to engage and disengage said formation with said plurality of engaging teeth provided on said inner member depending on direction of turning of said handle.

4,452,108

RATCHETING PIPE WRENCH

Lawrence F. Irwin, 12860 San Fernando Rd., Sylmar, Calif. 91342, and Robert Millray, 16036 Baker Canyon Rd., Saugus, Calif. 91350

Continuation of Ser. No. 939,471, Sep. 5, 1978, abandoned. This application Jun. 3, 1980, Ser. No. 156,035
Int. Cl.³ B25B *13/12, 13/28*
U.S. Cl. 81—129 **6 Claims**



1. A ratcheting wrench for gripping cylindrical work pieces comprising:
(a) a first member having a forward portion comprising a first work piece gripping jaw and a shank portion provided with a pair of transversely spaced apart racks arranged longitudinally of said shank;
(b) a second member comprising a rearwardly extending handle portion and a forward portion having spaced apart walls defining a longitudinally extending guide way adapted to slidably receive said first member;
(c) a pair of transversely spaced apart pinions rotatably carried by said second member and adapted to mesh with said rack of said first member;
(d) a second work gripping jaw rotatably carried by said second member and disposed intermediate said pinions, said second jaw being arranged coaxially with said pinions and being of larger diameter, said channel of said second member being configured to permit both longitudinal and limited pivotal movement of said first work gripping jaw relative to said second work gripping jaw whereby with the work piece positioned between said jaws, forces exerted on said handle portion tending to rotate said work piece in a tightening direction will cause said relative jaws to tighten about said work piece said second work gripping jaw being adapted to grip uneven surfaces and being freely rotatable relative to said work piece upon the release of said forces on said handle portion whereby the wrench can be freely ratcheted into a second gripping position upon exertion of forces on said handle in a loosening direction; and
(e) means for yeildably urging said first work gripping jaw longitudinally toward said second work gripping jaw.

4,452,109
LATHE FOR SIMULTANEOUS MACHINING OF TWO WORKPIECES

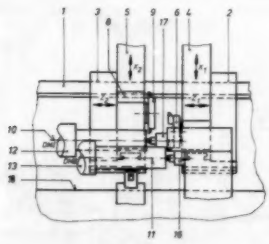
Reinbold Ballach; Dieter Kroll, and Jürgen Rinn, all of Giessen, Fed. Rep. of Germany, assignors to Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH, Giessen, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,193

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110674

Int. Cl.³ B23B *3/34, 19/02*

U.S. Cl. 82—3 **4 Claims**



1. A lathe for simultaneously machining at least two like workpieces comprising a bed guide, at least two bed slides displaceably mounted on said bed guide for longitudinal movement, at least two cross slides displaceably mounted on said bed slides for transverse movement, a turret mounted on each cross slide, at least two spindles whose axes of rotation are perpendicular to said bed guide and are mutually parallel, and a chuck carried by each spindle, said chucks being axially offset with respect to each other.

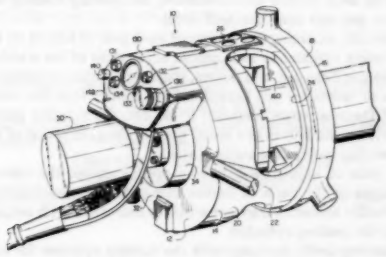
4,452,110
PORTABLE LATHE

John O. Emmerson, Magnatech, Bradley Park, East Granby, Conn. 06026

Filed Aug. 24, 1981, Ser. No. 295,635

Int. Cl.³ B23B *3/00*

U.S. Cl. 82—4 C **7 Claims**



1. In a portable lathe for machining the end of a pipe workpiece, comprising a lathe frame, a rotary drive motor mounted on the frame, a rotatable cutting tool support driven in one angular direction by the motor, means for axially advancing the cutting tool support in a forward axial direction for feeding a cutting tool mounted thereon for machining the end of the pipe workpiece and mounting means for mounting the lathe on a pipe workpiece with the cutting tool support generally coaxial therewith for machining the end of the pipe workpiece, the mounting means including a locating mandrel coaxial with the cutting tool support having a forward end adapted to be mounted generally coaxially within a pipe workpiece, the improvement wherein the lathe frame has a forward annular collar generally coaxial with and forwardly of the cutting tool support for receiving a pipe workpiece mounted on the lathe locating mandrel, said mandrel having means for being mounted in a fixed position relative to said pipe workpiece, a plurality of angularly spaced clamps mounted on the annular collar for externally clamping a pipe workpiece within the collar and generally coaxial with and forwardly of the cutting tool support to restrain the lathe against rotation relative to the pipe workpiece while the end of the pipe workpiece is machined by the lathe, the cutting tool support advancing means comprising at least three angularly spaced axially extending linear hydraulic actuators mounted on the lathe frame rearwardly of the cutting tool support, adjustable valve means for adjusting the rate of flow of hydraulic fluid to the linear hydraulic actuators for controlling the rate of advancement of the tool support, flow restrictor means permitting restricted hydraulic fluid flow between the hydraulic actuators for damping an unbalanced tool reaction force on the cutting tool support during machining, and a nonrotatable and axially shiftable annular thrust member mounted coaxially with the rotatable tool support between the tool support and the linear hydraulic actuators, the annular thrust member having a plurality of angularly spaced, rotatable thrust rollers engageable with the tool support and being engageable by the linear hydraulic actuators for axially advancing the tool support via the thrust rollers.

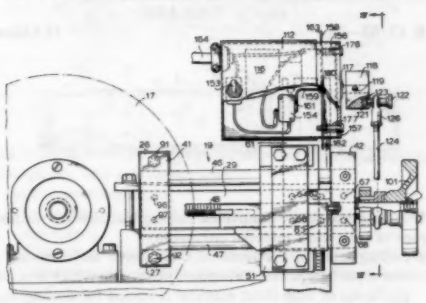
4,452,111
ADJUSTABLE DISK AND DRUM LATHE MECHANISM WITH AUTOMATIC DRIVE

Vyron E. Anderson, Cedar Rapids, Iowa, assignor to Kwik-Way Manufacturing Company, Marion, Iowa

Filed May 20, 1982, Ser. No. 380,046

Int. Cl.³ B23B *5/02, 21/00*

U.S. Cl. 82—4 A **3 Claims**



1. An automatic drive mechanism for a portable disk cutting machine adapted to be mounted on a machine comprising a support member attached to said machine, a pair of cutting tools for machining opposite sides of a disk moveably mounted on said support member, drive means connected to said disk to rotate it, a manual means coupled to said cutting tools for radially moving said cutting tools relative to the disk, and a motor means mounted on said support member and coupled to said cutting tools to move them in a single direction relative to said disk, wherein said cutting tools are driven in or out by a lead screw and said manual means and said motor means are coupled to said lead screw to move said cutting tools, including a one-way clutch connected between said motor means and said lead screw so as to cause said motor means to drive said cutting tools in a single direction, wherein said motor means drives a crank, a link connected to said one-way clutch, and a crank arm connected between said link and said crank, wherein said crank comprises a plate member formed with a slot and an adjusting member attached to one end of said crank arm and adjustably receivable in said slot to adjust the throw of said

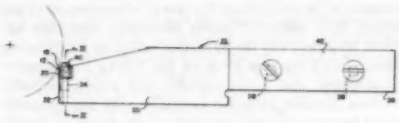
crank arm, and including a motor switch for said motor means motor switch actuating means, means on said cutting tool support for engaging said motor switch actuating means and opening said motor switch adjacent one end travel of said cutting tools.

4,452,112

METHOD OF PARTING METALLIC RINGS

Jesse A. Alexander, Lewistown, Pa., assignor to Titanium Metals Corporation of America, Pittsburgh, Pa.

Filed Jan. 15, 1982, Ser. No. 339,574
Int. Cl.³ B23B *1/00*
U.S. Cl. 82—47 **6 Claims**



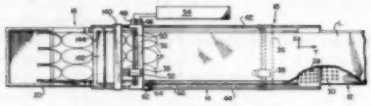
1. A method of parting a metallic ring rotating about a horizontal axis comprising the steps of first presenting the cutting edge of the parting tool to the ring below its center of rotation and then advancing the parting tool toward the rotating ring to engage and part the ring.

4,452,113

METHOD AND APPARATUS FOR SEALING CUT SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed Apr. 12, 1982, Ser. No. 367,430
Int. Cl.³ B26D *3/00*
U.S. Cl. 83—56 **12 Claims**



1. An automatically controlled cutting machine for cutting layups of limp sheet material comprising:

a cutting table in the form of a conveyor table having a conveyor belt defining a support surface on which a multiply layup of limp sheet material is spread for cutting and for movement along the table;

a tool carriage movable back and forth over the cutting table and having a cutting tool movable with the carriage to perform cutting operations on the material;

vacuum generating means connectable with the layup of sheet material on the support surface for generating a vacuum within the layup and compressing the sheet material on the support surface; and

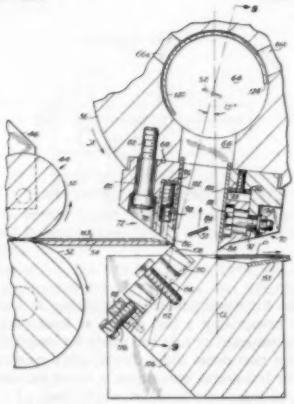
a sealing carriage also movable back and forth over the cutting table and carrying a retractable roll of an air-impermeable overlay material, the free end of the roll being connected with one end of the cutting table, the sealing carriage also being releasably coupled with the tool carriage for movement with the tool during cutting operations and spreading the overlay material on the portion of the sheet material between said one end of the table and the sealing carriage to seal cuts in the material and prevent loss of vacuum in the layup, the sealing carriage being releasable from the tool carriage to retrieve the overlay material from the layup before the layup is moved along the table by the conveyor belt.

4,452,114

APPARATUS FOR CONTINUOUSLY CUTTING AND REMOVING THIN TRIM STRIPS FROM A PRINTED WEB

Milan Rynik, Scarsdale, N.Y., and John Nickel, Passaic, N.J., assignors to Blava In-Line, Inc., Carlstadt, N.J.

Continuation of Ser. No. 187,054, Sep. 15, 1980, Pat. No. 4,409,870. This application Feb. 4, 1983, Ser. No. 464,102
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.³ B26F *1/38*
U.S. Cl. 83—100 **4 Claims**



1. Apparatus in-line with a web press for continuously cutting and removing thin trim strips of a width as small as in the range of 1/16th of an inch from a moving web to form web products, said apparatus including:

a frame;

a cutting cylinder operating on the web at a cutting area, the cylinder having an axially extending central bore and a number of gaps leading to said bore;

means for rotating said cylinder;

pairs of knives carried by the cutting cylinder for cutting the web, each pair of knives defining an opening leading into the gap and then into said bore;

means for mounting the knives of each pair of knives on the cutting cylinder so as to enable adjustment of the width of the gap between said knives, the knives being mounted so as to provide a gap between them greater than the width of the trim strips intended to be cut, the rotating means driving the knives at a speed greater than the speed of the moving web at the cutting area;

the pairs of knives each having cutting edges, the cutting edges of the pairs of knives being skewed angularly inwardly toward a transverse center line taken with respect to the cutting cylinder;

a shearing knife coacting with the cutting cylinder for cutting strips from the web at the cutting area, the shearing knife including a cutting edge, the edge being angularly skewed with respect to the center line of the cutting cylinder in a direction opposing the cutting edges of the pair of knives at the cutting area;

means for directing an air flow only through the opening between the pair of knives at the cutting area, the directing means including a stationary sleeve disposed within the bore, said sleeve having two sections and extending beyond the ends of the cylinder, each of said sections having a slot oriented toward the cutting area in communication with the opening between the pair of knives at the cutting area, and the gap leading to the bore, such that the air flow is applied only to the strips at the cutting area and

the cut strips are continuously moved away from the cutting area; and

low-pressure source means creating an air flow from the opening at the cutting area to the bore to remove the cut strips.

4,452,115
MACHINE FOR TREATING PLATE-SHAPED WORKPIECES ESPECIALLY A CUTTING PRESS

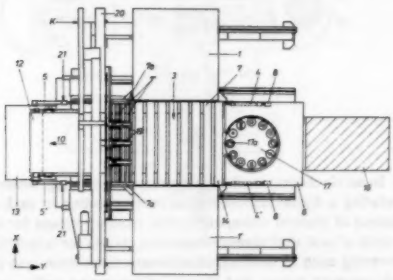
Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfeld, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,336

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135266

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—157 **14 Claims**



1. In a machine for treating plate-shaped workpieces, especially in a cutting press, equipped with at least one tool operating within a predetermined area, a stationary support for the workpiece at such predetermined area, and a coordinate table controlledly movable toward and away from the predetermined area and operative for supporting the workpiece thereon for joint movement therewith, a combination comprising a central support for the workpiece; and means for mounting said central support on the coordinate table for movement relative thereto and independently thereof toward and away from the predetermined area between a retracted position in which a discharge opening is defined between the same and the stationary support, and an extended position in which said discharge opening is substantially closed.

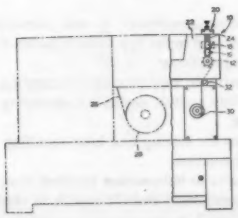
4,452,116
ASSEMBLY FOR ROTARY DIE CUTTING UTILIZING A SHAFTLESS ROLL

Martin Kesten, West Hartford, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.

Filed May 6, 1981, Ser. No. 260,898

Int. Cl.³ B23D *25/12*; B26D *1/40*

U.S. Cl. 83—346 **21 Claims**



1. In a press, a die-cutting roll assembly comprising: a substantially solid shaftless die-cutting roll having at least one cutting element on its outer cylindrical surface, having means for mounting a gear portion on one end thereof, and having a raised bearer portion disposed adjacent each of its opposite ends and extending circumferentially thereabout; and an adaptor device mounted in the press above and in direct contact with said die-cutting roll, said device comprising a highly rigid, substantially solid block of relatively large mass having means for mounting it in the press, four generally cylindrical bearings rectangularly disposed on said block on two parallel, laterally extending axes, said bearings being mounted for rotation about said axes with their circumferential surface portions lying beyond the lower surface of said block and in rolling contact upon the circumferential surfaces of said raised bearer portions of said die-cutting roll, and means on said device extending downwardly into contact with at least one end surface of said die-cutting roll for providing lateral stability thereto.

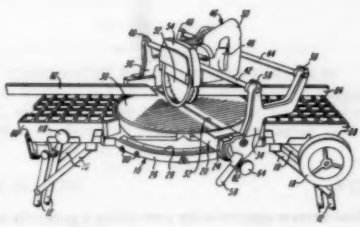
4,452,117
SELF-ADJUSTING FENCE FOR MOTORIZED SAW UNIT

Louis D. Brickner, Pittsburgh, Pa.; Clifford P. Rickmers, and Bobby B. Donovan, both of Tupelo, Miss., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 12, 1982, Ser. No. 367,814

Int. Cl.³ B27B *5/24*

U.S. Cl. 83—467 R **9 Claims**



1. A motorized saw for cross-cutting and mitering elongated workpieces, said saw comprising:

(a) a supporting frame;

(b) a support mounted for selective rotation on said supporting frame;

(c) means interconnecting the ends of said support arm defining track elements for slidably supporting the motorized saw;

(d) a worktable fixed on said support arm which includes an elongated cutting channel extending parallel with said track element and defining the pathway of the saw;

(e) a pair of spaced table extensions disposed on each side of and in close proximity to said worktable;

(f) a fence support fixed on one side of each said table extension;

(g) guide means supported by said fence supports for maintaining said fence members in close proximity with said fence supports;

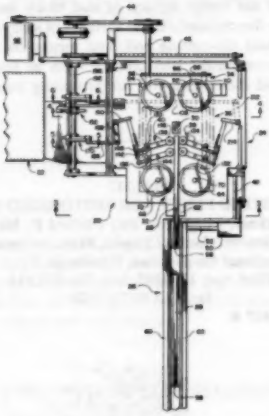
(h) a pair of spaced and aligned fence members mounted for sliding movement on said worktable and having adjacent ends disposed in operative association with said cutting channel; and

(i) means operatively connecting said support arm and said fence members for moving said fence members simultaneously to maintain adjacent ends thereof in operative association with said cutting channel upon rotation of said support arm to selectively change the angular setting of said channel and the cutting angle of the saw.

4,452,118
SHAKE RESAW MACHINE

Reinhard Muller, 9425 Carleton St., Chilliwack, British Columbia, Canada

Filed Dec. 6, 1982, Ser. No. 447,440
Int. Cl.³ B27M 3/02; B26D 3/30
U.S. Cl. 83—871 19 Claims



1. Shake resaw apparatus for converting a generally rectilinear wooden blank into a pair of oppositely tapered shingles, each having a tip end and butt end, comprising:

a. a support table hingedly disposed for cooperative engagement with saw means for lateral movement with respect to a longitudinal feed axis along which a wooden blank progresses during a resaw sequence through said saw means, including a first tip-cutting stage, an intermediate diagonal-cutting stage, and a second tip-cutting stage;

b. table control means for moving said support table at a predetermined rate in a lateral path relative to said feed axis during said resaw sequence;

c. first and second blank guide means having variable lateral stiffness, one of each disposed on either side of said feed axis forwardly proximate a saw blade location thereon, for cooperatively routing said blank along a variable, predetermined resaw path;

d. first guide control means for regulating the lateral stiffness of said first blank guide means during said resaw sequence, permitting lateral deflection thereof during said first tip-cutting stage and establishing guiding-effective stiffness to provide a generally rigid guiding surface for said blank during the remainder of said sequence;

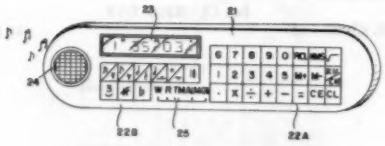
and,

e. second guide control means for regulating the lateral stiffness of said second blank guide means during said resaw sequence, permitting lateral deflection thereof during said second tip-cutting stage and establishing guiding-effective stiffness to provide a generally rigid guiding surface for said blank during the remainder of said sequence.

4,452,119
ELECTRONIC MUSICAL INSTRUMENT WITH MUSICAL INFORMATION INPUT MEANS

Akira Tanimoto, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 881,437, Feb. 27, 1978, abandoned. This application May 29, 1980, Ser. No. 154,371
Claims priority, application Japan, Feb. 28, 1977, 52-22087; Dec. 26, 1977, 52-157815
Int. Cl.³ G10F 1/00
U.S. Cl. 84—1.03 34 Claims



1. In an electronic musical instrument comprising means for generating a digital representation corresponding to each of a sequence of musical notes; electronic memory means for storing each of said digital representations; means for sequentially recovering each of said digital representations from said electronic memory means, and means for generating audio signals corresponding to the sequence of musical notes from said digital representations, the improvement comprising:

input key switch means within said digital representation generating means for selecting octave, pitch, and duration of notes and designation of rests, and including; a plurality of input key switches contained within a first actuated group, at least one of which is actuated for determining only octave information, a plurality of input key switches contained within a subsequently actuated group, at least one of which is actuated for determining only pitch information of musical notes;

each of said first actuated input key switches having indicia determinative of the octave information of the musical notes and each said subsequently actuated input key switches having indicia determinative of the pitch information of the musical notes in a selected octave; and

a second plurality of input key switches at least one of said switches being subsequently actuated for determining only length information of said musical notes together with information indicative of the identity and occurrence of rest codes.

32. An electronic calculator and timepiece comprising:

input key switch means including a single plurality of keys for both providing numeral information and musical information;

processing means responsive to said numeral information provided by said input key switch means for calculating arithmetic operations;

means responsive to said musical information provided by said input key switch means for decoding said musical information;

memory means for storing and later recalling said decoded musical information;

means responsive to information recalled from said memory means for generating audible sounds in response thereto; and

a timepiece having an alarm;

said means for generating audible sounds being actuated in response to activation of said alarm.

4,452,120
TUNING PEG ASSEMBLY

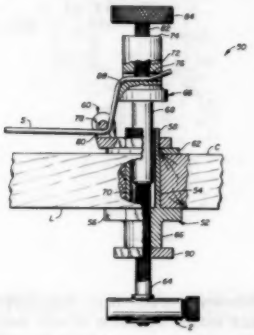
Slim Chance, Mill Valley, and William T. Gray, Topanga, both of Calif., assignors to John Caruth, Richardson, Tex., a part interest

Continuation of Ser. No. 231,818, Feb. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 184,702, Sep. 18, 1980, Pat. No. 4,367,671. This application Nov. 26, 1982, Ser. No. 444,786

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.³ G10D *3/14*

U.S. Cl. 84—306 1 Claim



1. A tuning peg assembly for use on stringed instruments comprising:

a moveable string tightening post being mounted to said instrument for movement along a substantially linear first path;

a rotatable drive shaft;

means operably coupling said drive shaft and said tightening post;

a handle mounted to said drive shaft generally transverse to the axis of rotation of said drive shaft;

and

means for adjustably clutchably driving said drive shaft.

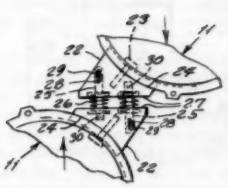
4,452,121
SEPTACUSSION

Michael W. Green, 19191 Biltmore, Detroit, Mich. 48235

Filed Jun. 7, 1982, Ser. No. 385,561

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—421 3 Claims



1. A septacussion percussion instrument, comprising, in combination, a plurality of drums and an assembly for holding said drums fixedly together, said assembly comprising a block between adjacent said drums, a carrying handle attached to one said block, and a microphone holder attached to one said drum, and means to contract said septacussion instrument.

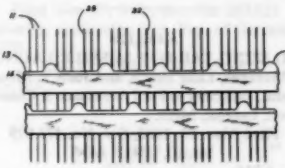
4,452,122
PIANO TUNING MUTES

Bruce F. Kovach, 5918 Radnor, Detroit, Mich. 48224

Filed Dec. 16, 1982, Ser. No. 432,567

Int. Cl.³ G10C *9/00*

U.S. Cl. 84—458 2 Claims



1. A muting strip for use in tuning pianos which comprises a strip of muting material having a series of wedges thereon which are spaced at such a distance from each other so that the said wedges will fit into everyother space between the three string unisons of a piano, and a method of using a number of the said muting strips where, in tuning, two of the said muting strips are placed one above the other and offset one unison so that all spaces between the said unisons are muted and after the center string of each is tuned, one outer string of each of the said unisons are tuned, then the remaining said muting strip is shifted over one space and then the remaining outer strings are tuned.

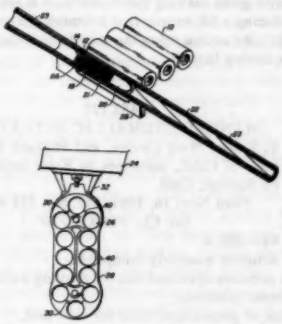
4,452,123
COMPOSITE ROUND/RAPID FIRE GUN

John W. Holtrop, and Bruce C. Bartels, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1982, Ser. No. 353,787

Int. Cl.³ F41F *3/02*

U.S. Cl. 89—1.706 5 Claims



1. A rapid fire gun suitable for use on aircraft comprising:

a barrel;

a barrel liner mounted within said barrel, said liner having fore and aft sections separated by a predetermined space within said barrel;

an indexing pod containing a plurality of chambers which are sequentially aligned with said barrel such that a chamber placed within the barrel is blocked in said predetermined space between said fore and aft liner sections by said fore and aft liner sections;

a plurality of enclosed gun rounds, one in each chamber of said indexing pod and where each of said enclosed rounds further comprises:

a composite walled container;

a projectile in one end of said container;

combustion means for propelling said projectile at the other end of said container; and

sealing means at each end of said container holding said projectile and combustion means in said container until ignition of the combustion means; and

igniting means between the barrel and the enclosed round for igniting said combustion means when said enclosed round is in the barrel.

4,452,124

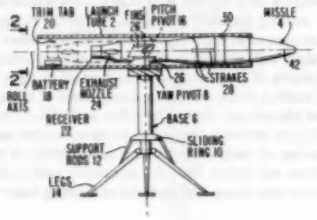
STABILIZING TAB FOR MISSILE LAUNCHER

Richard C. Morenus, Long Beach, and John T. Moore, Orange, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 10, 1983, Ser. No. 473,929

Int. Cl.³ F41F *3/04*

U.S. Cl. 89—1.816 **8 Claims**



1. An apparatus for launching a missile comprising:

an elongated generally cylindrical hollow launch tube having open front and rear ends, said tube accommodating therewithin an elongated generally cylindrical missile to be launched therefrom;

a single support for the tube, located generally at the center of mass thereof; and

a stabilizing trim tab located within the launch tube near its rear end, the trim tab disposed to present a surface area to exhaust gases leaving the missile as it is launched, thereby producing a lift torque that balances the torque produced by gravity acting upon the missile as it travels within the tube during launch.

4,452,125

MANUAL-HYDRAULIC ACTUATOR

William F. Keller, West Covina, and Richard D. Sibley, Anaheim, both of Calif., assignors to Koso International, Inc., Santa Fe Springs, Calif.

Filed Nov. 16, 1981, Ser. No. 321,443

Int. Cl.³ F15B *13/10*

U.S. Cl. 91—189 A **28 Claims**

1. An actuator assembly comprising:

a fluid pressure operated unit for moving a controlled part to different positions;

a source of pressurized fluid for said unit;

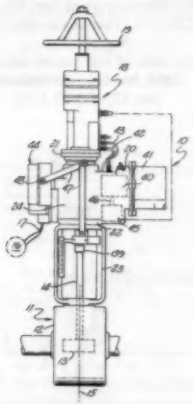
an automatic control responsive to variations in an input signal to control the delivery of fluid under pressure from said source to said unit in a relation automatically moving said part in correspondence with said variations in the input signal;

a manual operator for moving said part upon failure of said automatic control;

mechanism for controlling the effectiveness of said manual operator to move said part and actuable between a first condition in which said manual operator can move said part and a second condition in which said manual operator can not move said part; and

means automatically responsive to a change in condition of said pressure fluid source to actuate said mechanism between said two different conditions thereof in a relation rendering the effectiveness of said manual operator to control said part dependent upon the capacity of said source to provide fluid for said automatic control;

said mechanism including two threaded elements one of which is rotatable relative to the other by said manual operator to move said part, one of said threaded elements



being withdrawn laterally from engagement with the other in said second condition of said mechanism and being in threaded engagement with the other threaded element in said first condition to render the manual operator effective to move said part.

4,452,126

PNEUMATIC DRIVE

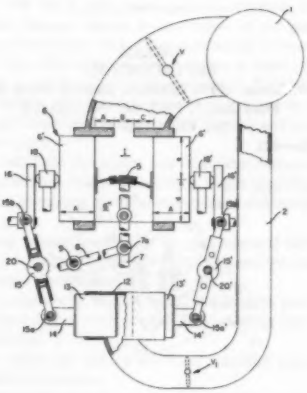
Mitko Tomov, Moosacher Strasse 75, Munich 40, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,839

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117740

Int. Cl.³ F01B *21/02*

U.S. Cl. 92—6 R **11 Claims**



1. In a pneumatic drive, a combination comprising first means defining at least one working cylinder having an interior adapted to receive a pressure medium and including a first pair of opposed cylinder side walls and a second pair of opposed cylinder side walls which extend at right angles to said first

pair and are movable relative thereto towards and away from one another; and second means defining in said interior a working piston which is reciprocable through a working stroke during which it exposes a first piston surface area to the pressure medium, and an idle stroke during which it exposes a smaller second piston surface area to the pressure medium.

4,452,127

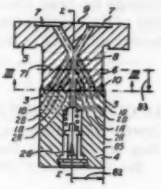
ANTI-FRICTION MEANS IN PIVOT MEANS IN RADIAL PISTON PUMPS, MOTORS OR TRANSMISSIONS

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation of Ser. No. 790,822, Apr. 25, 1977, abandoned. This application Feb. 14, 1980, Ser. No. 121,356

Int. Cl.³ F01B *31/10*

U.S. Cl. 92—159 **3 Claims**



1. An assembly of at least two bodies including a first body and a second body with said bodies being pressed together under a load;

wherein said first body has a first axis and a second axis;

wherein said second axis is normal to said first axis and extending through said first axis and through said first body;

wherein said second body includes an at least partially cylindrical member;

wherein said second body has a third axis coinciding with said second axis of said first body;

wherein said member extends around said third axis;

wherein said first body has an at least partially cylindrical outcut for the reception of said member of said second body;

wherein said member and said outcut have faces formed by substantially equal first radii around said second and third axes and wherein one of said faces forms a bearing bed in said first body while the other of said faces forms a bearing face on said member of said second body;

wherein said member is borne in said outcut and said load is acting in a direction substantially parallel to said first axis and normal to said second and third axes;

wherein said member of said second body is able to move in said outcut of said first body and around said second and third axes;

wherein said bearing face slides along said bearing bed when said member moves in said outcut relatively to said first body;

wherein at least two recesses are provided in at least one of said bodies and connected to said bearing bed and to said bearing face;

wherein said recesses constitute fluid pressure pockets;

wherein at least one fluid pressure passage extends through at least one of said bodies to said recesses;

wherein at least one portion of said bed and at least one portion of said face are located between said recesses and lubricated from both ends by fluid from said at least two recesses;

wherein said portions include straight lines and adjacend face-portions extending substantially normal to the direction of said load of one of said bodies relatively to the other of said bodies,

and

wherein said recesses are distanced from said first axis in a direction parallel to said second and third axes.

4,452,128

ACTUATOR

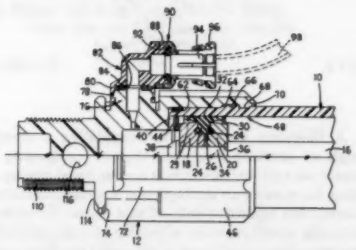
Kurt Stoll, Lenzhalde 72, 73 Esslingen am Neckar, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,821

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020390

Int. Cl.³ F16J *11/02, 15/18*

U.S. Cl. 92—163 **12 Claims**



1. In a fluid actuated device which includes a cylindrical sleeve, a piston axially slidably supported in said sleeve and sealingly engaging an inner surface thereof, two cylinder end parts which are each supported on and close a respective end of said sleeve and which each have a sleeve-like skirt portion which closely encircles the associated end of said sleeve, retaining means for retaining said end parts on said sleeve, said retaining means including cooperating, circumferentially extending locking grooves and locking ribs on said sleeve and said end parts, seal means for providing a fluid-tight seal between said sleeve and each said end part, means defining a passageway through each said end part which communicates with the interior of said sleeve on a respective side of said piston, and connection means on each said end part for facilitating connection of said passageway therein to a source of pressurized fluid, the improvement comprising wherein the outer surface of said sleeve includes a substantially cylindrical first surface portion at each end thereof which has a first diameter, a substantially conical second surface portion which is adjacent and diverges away from said first surface portion, a substantially cylindrical third surface portion which is adjacent said second surface portion on the side thereof remote from said first surface portion, said third surface portion having a second diameter greater than said first diameter and having a said circumferentially extending locking groove therein at a location spaced axially from said second surface portion, which locking groove has a substantially rectangular cross-section; wherein the inner surface of said skirt on each said end part has a shape complementary to the shape of the outer surface of the associated end of said sleeve and includes fourth, fifth and sixth surface portions which are disposed against respective said first, second and third surface portions on said sleeve, said sixth surface portion having a said circumferentially extending locking rib thereon which is received in said locking groove in said third surface portion, whereby each said end part is rotatable relative to but fixed against axial movement relative to said sleeve; wherein the outer surface of said skirt of each said end part has a plurality of circumferentially spaced, axially extending grooves therein; and wherein said connection means includes a respective L-shaped elbow pivotally supported on each said end part and having means defining a passageway therethrough which is in fluid communication with said passageway in such end part.

4,452,129

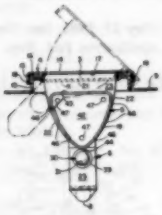
SPRING-RODLESS HINGELESS VENTILATOR

Timothy A. Kelley, 775 Virginia, Salem, Va. 24153, and Pamela K. Mather, 4313 Hillcrest Dr., Madison, Wis. 53705

Filed Feb. 28, 1983, Ser. No. 470,081

Int. Cl.³ B60H 1/26

U.S. Cl. 98—2.18 9 Claims



1. A hingeless ventilator for ventilating a compartment through an aperture in a wall thereof, comprising a frame attachable to said wall about said aperture and having a central opening for passing air through said aperture, a closure member swingable against a side of said frame for opening and closing said opening, guide means fixed to and instanding from an opposite side of said frame beyond said opening, arms means fixed to said closure member adjacent opposite ends thereof and instanding therefrom through said opening, and means for applying to said closure member through said arm means a tensile force holding said member against and in selected positions relative to said frame, said force applying means consisting of elastomeric roller means mounted on said arm means and therethrough connected to and swingable with said closure member and riding on and compressed against said guide means.

4,452,130

ELECTRICAL APPARATUS USEFUL TO PREPARE A HOT BEVERAGE

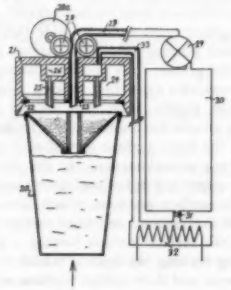
Peter Klein, 19763-44th Ave., Langley, British Columbia, Canada V3A 3C9

Filed Sep. 8, 1982, Ser. No. 415,901

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138779

Int. Cl.³ A47J 31/00

U.S. Cl. 99—307 5 Claims



1. In an electrical apparatus useful to prepare a hot beverage from a flavour substance the apparatus including a flow-through heater, a container for a liquid, a cup unit containing the flavour substance in an upper part and a first pipe communicating the cup unit and the liquid container, the improvement whereby the cup unit comprises:

a cup;

a filter carrier adapted to fit in the top of the cup and to carry a filter containing the flavour substance;

a main passage extending through the filter carrier and open at both ends of the carrier;

a channel defined between the base of the filter carrier and the main passageway;

second passageways joining the interior of the main passage to the channel;

an upper closure for the filter carrier;

a lower closure for the filter carrier;

and the heater unit comprises:

a container for a liquid;

a heater for the liquid;

a head adapted to fit over the cup unit;

the first pipe extending from the heater to the head; and

means to allow the liquid to pass from the container through the first pipe through the head, through the upper closure and into the filter of the cup unit whereby liquid may pass through the flavour substance in the filter.

4,452,131

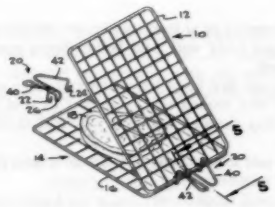
UNIVERSAL CLIP AND GRILL ASSEMBLY

Thomas Gaskins, Cypress Knee Museum, Palmdale, Fla. 33944

Filed Aug. 26, 1981, Ser. No. 296,513

Int. Cl.³ A47J 37/00

U.S. Cl. 99—402 7 Claims



1. A food support device comprising first and second planar grill members between which food items to be cooked are positioned and clamping members removably positioned along opposite side edges of said planar grill members for urging said grill members toward each other for clamping food items therebetween, said clamping members each comprising first and second side hooks each facing in one direction and fitted over one edge of one grill member, a center hook positioned equidistantly between said first and second side hooks but facing in an opposite direction from the facing direction of said side hooks and fitted over an edge of the other of said grill members and spring means connecting said hooks and said center hook for urging said hooks in their facing directions so that said first and second planar grill members are urged toward each other.

4,452,132

FOOD STEAMER

Dye O. Miller, Mount Prospect; August J. Antunes, Elmhurst, and Jerome Antunes, Clarendon Hills, all of Ill., assignors to A. J. Antunes & Co., Chicago, Ill.

Filed Dec. 6, 1982, Ser. No. 447,469

Int. Cl.³ A23L 3/00, 3/16; A47J 27/04, 36/24

U.S. Cl. 99—483 12 Claims

1. A steamer for warming food items, said steamer convertible from a needle injection steaming mode to a flash steaming mode, said steamer comprising:

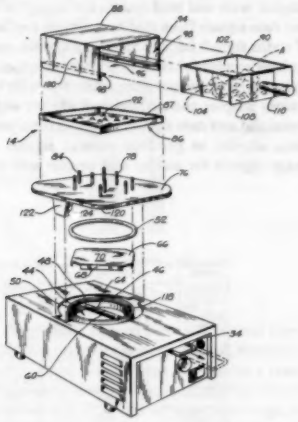
a housing;

a chamber defined within said housing, said chamber including means for generating steam;

a plurality of hollow, upstanding injection needles, mounted

on said housing, and adapted in said needle injection steaming mode to pierce a food item, each of said needles including a pair of spaced apart open ends, and each of said needles in fluid communication by way of one of said open ends with said chamber;

a removable riser plate mountable on said housing, said riser plate including a plurality of apertures therein arranged to permit the riser plate to rest on the top of said housing, said riser plate further including an upstanding peripheral flange extending upwardly from the top of the housing past the tops of said needles;



an enclosure removably mountable on said riser plate, covering said needles and in fluid communication with the other open end of each of said needles, said enclosure including a pair of inwardly projecting guide rails for engaging the peripheral flange of the riser plate and supporting the enclosure thereon; and

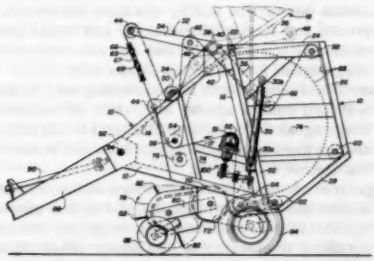
an open top drawer slidable into and out of said enclosure on said guide rails at a position above said needles, said drawer being adapted to contain said food items to be flash steamed within the interior of said drawer, said drawer interior being in fluid communication with said chamber by way of said needles when said drawer is located within said enclosure.

4,452,133

CAM GUIDE OPERATING MECHANISM FOR ROLL BALING MACHINE

Donald O. Bigelow, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Mar. 7, 1983, Ser. No. 472,512
Int. Cl.³ B30B *5/06*
U.S. Cl. 100—88 **12 Claims**



1. In a roll baling machine including a base frame, a bale forming apron supported on said base frame defining an expandable bale chamber, guide means on said base frame movable between an extended position inside said bale chamber for supporting said bale forming apron in order to define an initial shape for said bale chamber and a retracted position outside said bale chamber, spring means for urging said guide means toward said extended position, the improvement comprising:

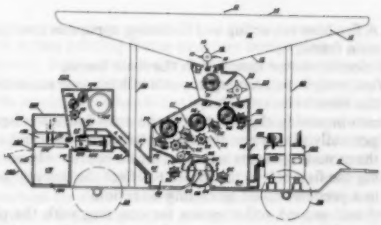
said guide means being movable from said expanded position to said retracted position during bale formation without being opposed by said spring means.

4,452,134

COTTON HARVESTER

Jimmy L. Muse, 113 Beta, Lafayette, La. 70506

Filed Jul. 19, 1982, Ser. No. 399,299
Int. Cl.³ B30B *9/30*
U.S. Cl. 100—90 **6 Claims**



1. A cotton combine comprising:

a. a frame, said frame providing a base and a super-structure;

b. means for containing cotton mounted on said super-structure comprising a first enclosure having an inlet opening in the top portion thereof, inclined walls terminating in an outlet opening in the lower portion thereof and means for feeding cotton through said outlet opening;

c. cotton boll breaking means below said outlet opening comprising a second enclosure having an inlet opening in communication with said outlet opening, a roller with a plurality of radially extending teeth, a rotating fan beater operatively associated with said roller, a plurality of screens for providing for movement of air through said boll breaking means and outlet means in the lower portion thereof;

d. cotton cleaning and ginning means comprising a third enclosure having an inlet opening in the top portion thereof in communication with said cotton boll breaking outlet means, a cleaning saw below said inlet opening, a brush operatively associated with said saw adjacent one-side thereof, a rotary stripper adjacent an opposite and bottom portion of said saw, at least one additional cleaning saw, rotary stripper and brush spaced downwardly and laterally of said first mentioned saw and adjacent said rotary stripper, a ginning means in said third enclosure below said cleaning saws and an outlet opening;

e. an outlet for surplus air in said third enclosure of said cotton cleaning and ginning means;

f. cotton condensing means comprising an inlet opening in communication with said cleaning and ginning means outlet opening for receiving cleaned and ginned cotton, a plurality of rollers, a means for exhausting air and an outlet opening;

g. a piston horizontally mounted below said condensing means and movable between first and second positions thereby permitting cotton to be provided to a cotton compressing and baling means; and;

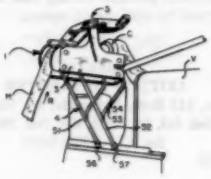
h. a rotating brush in said third enclosure for directing cleaned and ginned cotton from said cleaning and ginning means to said condensing means.

4,452,135

FIRE HOSE RETRACTING AND FLATTENING APPARATUS

Robert H. Hayes, 19A Forest Glen Rd., Valley Cottage, N.Y. 10989

Filed Aug. 31, 1981, Ser. No. 298,151
Int. Cl.³ B30B *3/00*
U.S. Cl. 100—153 **10 Claims**



1. A fire hose retracting and flattening apparatus comrpising:
a main frame;
an electric motor mounted in the main frame;
a first endless belt having a width at least as great as that of the hose to be retracted;
means mounting the first belt in the main frame to dispose a generally planar run thereof on which a hose can be lain, the mounting means including means operatively connecting the first belt to the motor to effect the driving thereof in a predetermined retracting direction;
first and second roller means for coacting with the planar run of the belt to retract and flatten a hose disposed therebetween;
means mounting the first and second roller means above the planar run, with the first roller means downstream of the second roller means, for pivotal movement between a first position wherein the first roller means is adjacent said run and the second roller means is spaced apart therefrom and a second position wherein the first roller means is spaced apart from the run and the second roller means is adjacent thereto; and
means biasing the first roller means towards the run in the first position and the second roller means towards the run in the second position and effecting movement of the first and second roller means from the first position to the second position in response to a predetermined separation between the first roller means and the belt run.

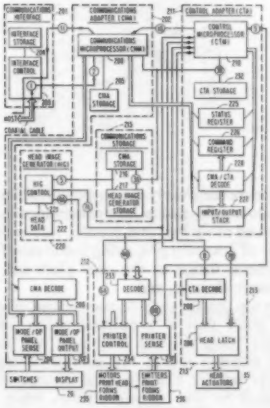
4,452,136

PRINTER SUBSYSTEM WITH DUAL COOPERATING MICROPROCESSORS

William W. Boyaton, Bronson, and Charles J. Weber, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,484
Int. Cl.³ B41J *3/10*
U.S. Cl. 101—93.05 **10 Claims**

1. A printer subsystem interconnected with a host system for receipt of command signals and data signals from said host system and transmission of status signals back to said host system, comprising:
a printer unit including a forms feed assembly, a ribbon drive assembly and a print assembly, said assemblies being operable to print data on forms in said printer unit in response to data signals as well as perform other operations in connection with printing;
a communications adapter, said communications adapter incorporating a communications microprocessor and said communications adapter being operable to translate command signals provided by said host system into control signals representative of printer actions required, such as print, carrige returns, line feeds, and the like and to process data signals provided by said host system;
a control adapter, said control adapter incorporating a control microprocessor and said control adapter being operable to receive status signals from various sensors in said printer unit, such as ribbon reverse/jam, forms jam, head position, linear encoder, forms position encoder, and the like, and further being responsive to command signals from said communications adapter and data signals generated in said subsystem to generate print firing signals and various control signals to control said forms feed assembly, said ribbon drive assembly and said print assembly in said printer unit;
interface means interconnecting said communications adapter with said host system for receipt of said command and data signals from said host system and for transmission of status signals back to said host system representative of various conditions in said printer subsystem;
image generator means interconnected with said communications adapter and said control adapter and responsive to command and data signals received from said communications adapter to produce control signals and character image signals for use by said printer unit during printing



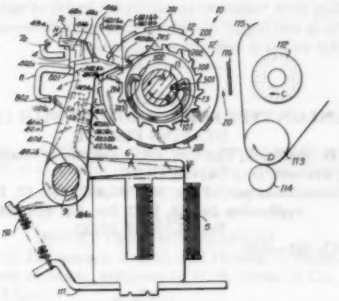
operations, said image generator means being operable to convert data signals from said host system to image signals in a format required to operate said printer unit, said image signals being provided to said printer unit via said control adapter;
communications storage means accessible by said communications adapter for storing character information to be printed and further accessible by said image generator means for conversion of said character information to image signals for use by said printer unit;
control and sense means interconnecting said printer unit with said control adapter for transfer of command and image signals from said control adapter to said printer unit and for transfer of status signals from said printer unit to said control adapter; and
register means interconnected between said communications adapter and said control adapter, said register means being operable to store command, data, image, and status signals pertaining to operation of said printer subsystem and for intercommunication purposes between said communications adapter and said control adapter.

4,452,137

SMALL-SIZED PRINTER

Shin Takeuchi, and Kenji Onodera, both of Shiojiri, Japan, assignors to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Aug. 13, 1982, Ser. No. 407,860
Claims priority, application Japan, Aug. 18, 1981, 56-129520
Int. Cl.³ B41J 1/52
U.S. Cl. 101—93.22 19 Claims



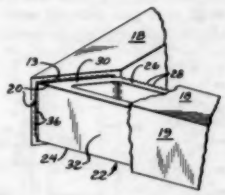
1. A printer comprising at least first and second type rings having types disposed on the periphery thereof, rotation means for rotating said first and second type rings from a reset position to a print position, first and second ratchet wheels disposed on the side of said first and second type rings, respectively, a shaft spaced from said first and second type rings, first and second pawl means pivotally supported on said shaft for stopping the rotation of said first and second type rings, respectively, control means associated with said first pawl means for moving said first pawl means into engagement with said first ratchet wheel when said first type ring is in its reset position to prevent rotation thereof, said rotation means rotating said second type ring into a print position while said first type ring is held in its reset position by said first pawl means, lever means associated with said first and second pawl means for selectively moving said first and second pawl means into engagement with said first and second ratchet wheels, respectively, an electromagnet means for actuating said lever means, positioning means for positioning said second pawl means out of engagement with said second ratchet wheel, said electromagnet means selectively actuating said lever means when said first pawl means is engaged with said first ratchet wheel when in its reset position, said actuated lever means moving said second pawl means into engagement with said second ratchet wheel to stop the rotation thereof when in a print position, said electromagnet means releasing said lever means after said second pawl means is engaged with said second ratchet wheel, said positioning means holding said second pawl means in engagement with said second ratchet wheel, said control means permitting said first pawl means to release from said first ratchet wheel when said second pawl means is engaged with said second ratchet wheel, said rotation means rotating said first type ring to a print position, said electromagnet means selectively reactuating said lever means, said reactuated lever means moving said first pawl means into engagement with said first ratchet wheel to stop the rotation of said first type ring when rotated to a print position, said lever means being pivotally supported on said shaft, said lever means being disposed intermediate said first and second pawl means on said shaft, said first and second pawl means each including a projection which extends into the path of pivot of said lever means, said lever means selectively contacting said projections on said first and second pawl means when said lever means is actuated by said electromagnet means.

4,452,138

SCREEN PRINTING FRAME

Henry J. Bubley, Deerfield, and Melvin E. Green, Evanston, both of Ill., assignors to American Screen Printing Equipment Co., Chicago, Ill.

Filed Jun. 17, 1982, Ser. No. 389,174
Int. Cl.³ B05C 17/08; B41L 13/02
U.S. Cl. 101—127.1 8 Claims



1. A screen printing frame structure comprising:

a screen; four metal tubular frame members having hollow interiors assembled into a quadrilateral configuration with the screen being bonded at its edges to said members; rigid internal connectors of metal having positioning surfaces at right angles to each other telescoped into the hollow interiors of adjacent frame members at their ends and rigidly positioning the frame members to form right angle corners for the structure, each said connector having two arms, a resilient portion on each of said arms being deflected when the arm is telescoped into a frame member so that each of said arms is frictionally engaged within its associated frame member; the hollow tubular frame members having outer surfaces free from recesses or protrusions for collecting solvent,

sealing means at the intersections of the ends of the tubular frame members to prevent a liquid path into the interior of the hollow members, and bonding means for bonding facing surfaces on each of said arms and said frame members to supplement the frictional engagement and to unite the tubular frame members and internal connectors without use of external fasteners.

4,452,139

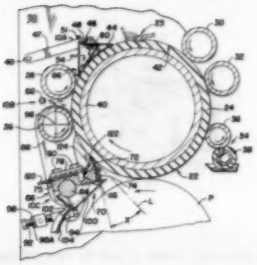
DAMPENING FLUID EVAPORATOR AND METHOD

Harold P. Dahlgren, 11 Turtle Creek Bend, Dallas, Tex. 75204; James E. Taylor, 4129 Drowsy La., Dallas, Tex. 75233, and Dwight W. Peters, Rte. 1, Box 50N, Grapevine, Tex. 76051

Filed Apr. 26, 1982, Ser. No. 371,807
Continuation-in-part of PCT/US 81/01213, Sep. 8, 1981, published as WO 83/00842, Mar. 17, 1983, abandoned.
Int. Cl.³ B41F 7/26, 31/04
U.S. Cl. 101—148 13 Claims

1. A method of inking a lithographic printing plate wherein dampening fluid having a viscosity of approximately one centipoise, is applied to the printing plate to render hydrophilic, non-image areas, on the printing plate ink rejecting; and wherein ink, having a viscosity significantly greater than 10 poise, is applied by a single inking form roller, having a resilient surface, to oleophilic, image, areas on the printing plate at an inking nip, the improvement comprising the steps of: positioning a doctor blade in pressure indented relation with the resilient surface of the inking roller to engage ink and dampening fluid on the portion of the surface of the inking roller which has applied ink to the printing plate and before fresh ink is applied to the portion of the inking roller surface; positioning the metering surface of the doctor blade at an angle relative to a line tangent to the roller surface to remove liquid having a viscosity less than a predetermined viscosity from the surface of the inking roller and to leave liquid having a viscosity greater than the predetermined viscosity on the surface of the inking roller; directing a stream of drying fluid to engage the surface of the from roller to evaporate dampening fluid which passes the doctor blade; rotating a roller in pressure indented

relation with the single inking form roller to form a matte surface on the film of liquid on the form roller from which liquid has been removed by the doctor blade; and applying



fresh ink having a viscosity greater than said predetermined viscosity to the portion of the inking form roller surface from which liquid having a viscosity less than said predetermined viscosity has been removed.

4,452,140

PRINTED WEB REGISTRATION CONTROL APPARATUS

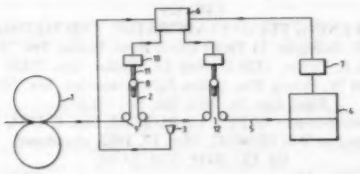
Jeffrey Isherwood, Enfield, and Delwyn L. Morris, Potters Bar, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Feb. 11, 1982, Ser. No. 347,857

Claims priority, application United Kingdom, Feb. 19, 1981, 8105325

Int. Cl.³ B41F *5/06, 5/16*

U.S. Cl. 101—181 **7 Claims**



1. In an apparaus for controlling the length register of a printed web of material including a printing station for printing a repetitive pattern on a web of material, a length registration station for varying the length of the web path, a print detector, a web processing staion, an encoder coupled to said web processing station, and a control unit, said web of material printed by said printing station following a web path from said printing station through said length registration station past said print detector to said web processing station, said print detector monitoring the passage of printing on said web, and providing a print output signal indicative of said passage of said printing on said web, said encoder coupled to said web processing station providing an operating output signal indicative of the operation of said web processing station, said control unit receiving said print output signal and said operating output signal and providing an error output signal indicative of the difference in phase between said print output signal and said operating output signal, said error output signal from said control unit controlling said length registration station thereby causing said web path length through said length registration station to vary as a function of said error signal whereby any error in the registration of said printing on said web resulting from variations in the repeat length of said repetitive pattern in said length of said web extending between said printing station and said print detector is compensated, the improvement wherein, further registration means to adjust said error signal are coupled to said control unit and are operated in dependence upon the difference in phase between said print output signal and said operating signal in order to compensate further for any error in said registration of said printing on said web resulting from variations in said repeat length of said repetitive pattern in said length of said web extending between said print detector and said web processing station.

4,452,141

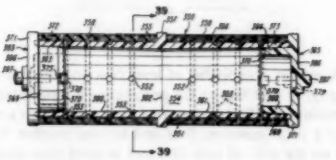
FOUNTAIN-TYPE POROUS ROLLER WITH CENTRAL BEARING FLANGE

John D. Mistyurik, Tipp City, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 349,497, Feb. 17, 1982. This application Jul. 21, 1982, Ser. No. 400,538

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—348 **18 Claims**



1. A fountain-type ink roller, comprising: an elongate, one-piece tube composed of molded plastics material, the tube having a pair of circular cylindrical outer surfaces, a first annular flange disposed at one end portion of the tube, a second annular flange disposed at the other end portion of the tube, and a third flange disposed generally centrally between the end portions of the tube, the first, second and third flanges projecting outwardly beyond the outer surface of the tube, the portions of the tube on each side of the third flange being perforate and providing a roll mounting portion, the space inside of the tube being adapted to receive a supply of ink, a porous ink-receptive roll disposed on each roll mounting portion, the third flange being molded as an integral part of the tube to maintain the circular cylindrical shape of the outer surfaces of the tube after molding, closure means including a closure for each end portion of the tube, a shaft portion projecting outwardly from each closure, the shaft portion, the circular cylindical outer surfaces, and the first, second and third flanges being coaxial.

4,452,142

MULTIPLE HEAD RUBBER STAMP

Robert E. Eckels, 2101 Youngfield, Golden, Colo. 80401

Filed Jun. 6, 1980, Ser. No. 157,282

Int. Cl.³ B41K *1/04, 1/56*

U.S. Cl. 101—368 **6 Claims**

1. A multiple rubber stamp device, comprising

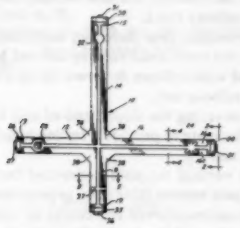
(a) stamp frame means having a plurality of arms extending outwardly from a central joining position,

(b) a rubber stamp platform secured to each end of each said extending arm, providing a surface for attachment of a rubber stamp,

(c) rubber stamp means secured on each said rubber stamp platform, and each rubber stamp means having a symbol formed thereon, and

(d) tactile sensing means comprising indicia formed on each of said extending arms adjacent the rubber stamp means secured to the end thereof, said indicia corresponding to

the symbol formed on said rubber stamp means for tactile sensing by a users' fingers and said extending arms being



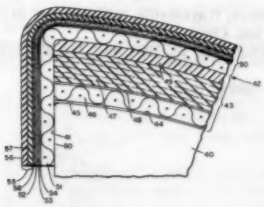
different lengths from said central joining position to the end of each arm for tactile sensing by a user's fingers.

4,452,143

OFFSET PRINTING BLANKET

Frederick E. Heinemann, Canton, and Thomas D. Gavin, Harvard, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Jul. 25, 1980, Ser. No. 172,055
Int. Cl.³ B41N *9/00*
U.S. Cl. 101—426 **9 Claims**



1. A method of making-up an offset printing cylinder having a lock-up that has a lock-up gap comprising adhering a one piece compressible printing element on said cylinder extending from one edge of the lock-up gap to beyond the opposite edge of the lock-up gap, trimming that portion of the compressible printing element that extends beyond the edge of said lock-up gap to substantially flush with said edge of the lock-up gap, pulling a non-compressible printing ink receptive and transfer work surface carrying printing element taut over said compressible printing element with the bottom surface of said non-compressible printing ink receptive and transfer work surface carrying printing element directly engaged with the trimmed substantially flushed edge of said one piece compressible printing element and substantially continuously straight into said lock-up gap and securing the end in said lock-up gap under tension.

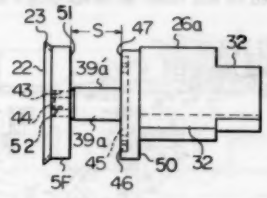
4,452,144

SHOTGUN CARTRIDGE AND WAD THEREOF

Nagatoshi Maki, 2-48-4, Kamiishihara, Chofu-shi, Tokyo, Japan

Continuation-in-part of Ser. No. 214,222, Dec. 8, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,788
Claims priority, application Japan, Apr. 15, 1980, 55-48734
Int. Cl.³ F42B *7/08*
U.S. Cl. 102—453 **11 Claims**

1. A wad for use in a case of a shotgun cartridge containing gunpowder, said wad comprising a cylindrical body having an axial center hole and first explosive gas passages extending through said body in directions parallel to the axis, said wad comprising further a disc plate which has a plunger fitted in and connected to the center hole of the wad body and which has at least one blade connected thereto to carry a mass of pellets and to transmit a rotational motion of the wad to the pellets, said body and said disc plate being separated by a predetermined gap, said wad body and said disc plate when forced together defining therebetween second explosive gas passages extending in directions non-radial to the axis of the cylindrical body, said body and said disc plate having a side surface spaced from the axis, said body having a bottom surface, said wad also comprising means for spacing a portion of



said side surface from said case, said spacing means including means for preventing passage of explosive gases passed the bottom of said body other than through said first explosive gas passages, a portion of said second explosive gas passages being aligned with said first explosive gas passages, said second explosive gas passages extending to the side surface of one of said body and said disc plate, whereby the explosive pressure of said exploding gunpowder causes said body and said disc plate to come together thereby causing the explosive gases flowing through said first and second explosive gas passages to rotate said wad about said axis.

4,452,145

PROPELLANT FOR BASE-BLEED GAS GENERATORS AND PROCESS FOR MANUFACTURING IT

Wolfgang H. R. Klöhn, Pfinztal; Dieter H. Müller, Karlsruhe, and Hiltmar A. O. Schubert, Walzbachtal, all of Fed. Rep. of Germany, assignors to S.A. PRB Societe Anonyme, Brussels, Belgium

Filed Feb. 17, 1981, Ser. No. 234,603
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006475
Int. Cl.³ F42B *11/00*
U.S. Cl. 102—501 **18 Claims**

1. A process for making a propellant for base-bleed gas generators which comprises the steps of dissolving a thermoplastically deformable elastomer in a solvent to form a solution with 10% elastomer, mixing at least one granulated oxidizer with said solution at a temperature of about 80° C., removing said solvent under vacuum by evaporation, and drying the resultant oxidizer particles coated with said elastomer at a temperature of about 50° C.

4,452,146

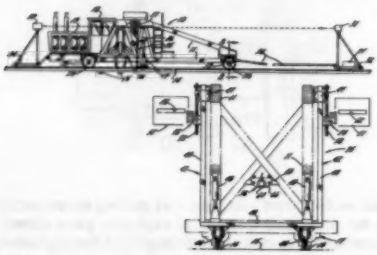
RAILROAD TRACK TAMPER LEVEL CONTROL SYSTEM

Bruce W. Bradshaw, and Robert N. Clive, both of Ludington, Mich., assignors to Jackson Jordan, Inc., Ludington, Mich.

Filed Jan. 26, 1982, Ser. No. 342,788
Int. Cl.³ E01B *27/17*
U.S. Cl. 104—7 R **7 Claims**

1. A level control system for a tamper having a substantially rigid frame with vertically fixed rear wheels for riding on adjusted track, vertically tiltable front wheels for following unadjusted track, and a jacking assembly between the front and rear wheels for selectively lifting the two track rails relative to the frame, the system comprising, in combination, a light source mounted for positioning on the track ahead of the tamper and directing light back toward the tamper from a

given vertical distance above the track, a light sensor mounted at the rear of the tamper for movement with the tamper above one of said rails thus designating that rail as the grade rail, rail followers mounted on said tamper frame near said jacking system to ride on the rails so that each rail has a follower that rises and falls with vertical movement of the respective rail independently of vertical movement of said frame, a mask on the rail follower riding on said grade rail that creates a light-no light interface in the light directed back from said source that falls on said sensor, said sensor developing a signal responsive to the vertical position of said light interface, a cross level sensor mounted on said frame for developing a signal repre-



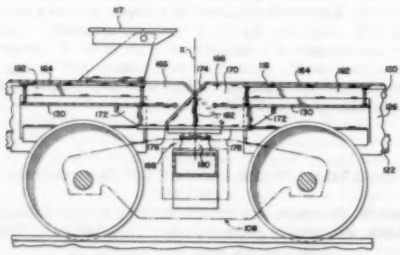
senting the cross level of said frame, a pair of vertical position sensors interconnecting said frame and respective ones of said rail followers for developing signals representing the vertical height of each of said rail followers, and a control circuit for operating said jacking system for lifting the grade rail under control of said signal developed by said light sensor and lifting the non-grade rail until said vertical position sensor signals indicate said rail followers are at equal height, said control circuit also comparing the cross level sensor signal with the vertical position sensor signals so that if the tamper frame is not cross level said jacking system will lift the rails to a true cross level.

4,452,147

INTERMODAL RAILWAY CAR

Karl J. Jwuc, Tallmade, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Mar. 10, 1981, Ser. No. 242,516
Int. Cl.³ B61F *5/14*; B61D *3/10*
U.S. Cl. 105—4 A **2 Claims**



1. An intermodal railway car for the transportation of rubber tired vehicle trailers or containers over the railway comprising:

two or more such intermodal railway cars having a number of standard railway trucks equal to the number of intermodal railway cars plus one;

articulated connections on at least one end of each intermodal railway car;

said articulated connections having a stub center sill for pivotal connection to the standard railway truck;

said articulated connections having at least one set of extension arms terminating in a side bearing connection to the standard railway truck;

each said extension arm including an I-shaped beam connected to the intermodal railway car and having an outer sloped end which slopes downwardly in a direction away from the railway car;

a cap plate covering the sloped end of said I-shpaed beam;

a bottom filler plate to provide a resting zone for said extension arm; and

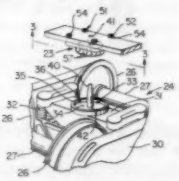
at least one vertical tie plate connected between said cap plate and said bottom filler plate to provide reinforcement vertically centered over the center of said side bearing connection to said standard railway truck.

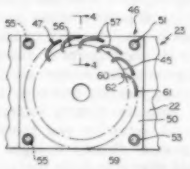
4,452,148

CUSHIONED CENTER PLATE STRUCTURE FOR A RAILWAY VEHICLE BODY AND METHOD OF MAKING SAME

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 28, 1981, Ser. No. 297,292
Int. Cl.³ B61F *5/20*
U.S. Cl. 105—199 C **10 Claims**





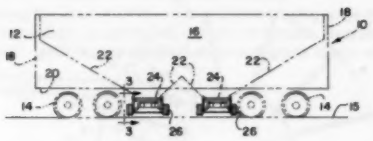
1. In a cushioned center plate structure for a railway vehicle body comprising, a substantially cylindrical disc-like component which is adapted to be received within the confines of an upstanding peripheral flange of an associated railway vehicle truck bolster bowl, means for mounting said component to a body bolster of said vehicle body, and means for cushioning loads between said component and flange, the improvement in which said mounting means comprises a plate, means for detachably fastening said plate to said body bolster, and means for supporting said component on said plate, said cushioning means comprising a plurality of resilient metal members defined as arcuate metal blades, each of said arcuate metal blades having an inner end portion fixed to said component and having a free outer end portion which is adapted to yieldingly engage said flange, said arcuate metal blades being adapted to be disposed within the confines of said flange.

4,452,149

GATE ASSEMBLY UNIT FOR HOPPER-TYPE RAILROAD CAR

Edward S. LeMarbe, Plainfield, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Sep. 27, 1982, Ser. No. 423,950
Int. Cl.³ B61D *7/00*
U.S. Cl. 105—250 **4 Claims**



1. A hopper-type railroad car adapted to carry ballast or other like particulate material, said car having a body formed with outlets in a bottom of such with said outlets aligning with rails on which said car is carried, and gate assembly units attached to said car body to cover each said outlet and provide selective discharge of said ballast, said gate assembly unit comprising,

a pair of spaced end plates,

an inner and outer angle connecting with an upper portion of each said end plate with each said angle having a leg portion for attaching to sloped sheets in part defining said car outlet,

a divider panel attached between said end plates below said angles, said divider panel having an upper leading edge defining in part an inner and outer opening with said inner and outer angles, and with seal plates attached to said angles and said divider panel immediately inside said end plates,

an inner and outer door each pivotally attached to said end plates, each said door having an arcuate face plate located respectively proximate inner and outer sealing edge of each said seal plate,

an outer door shaft rotatively carried by said end plates with outer door hubs attached at ends of said shaft, each said hub pivotally attached to an end of said outer door by a linkage arm, and

an inner shaft concentrically journaled within said outer door shaft, said inner shaft having ends extending beyond said outer door hubs to carry inner door hubs, each said inner door hub pivotally attached to an end of said inner door by a linkage arm,

wherein selective rotation of said inner or outer door shaft moves said inner or outer door to uncover said inner or outer unit opening respectively allowing distribution of ballast on either an inside, an outside, or both sides of a rail.

4,452,150

HOPPER CAR HATCH COVER

Danilo A. Dominguez, 1867 Piedras Cir., Danville, Calif. 94526

Filed May 13, 1982, Ser. No. 377,720
Int. Cl.³ B61D *39/00*
U.S. Cl. 105—377 **16 Claims**

1. A hatch cover assembly comprising:

panel means for forming a cover of a hatch opening provided in the roof of a railroad car;

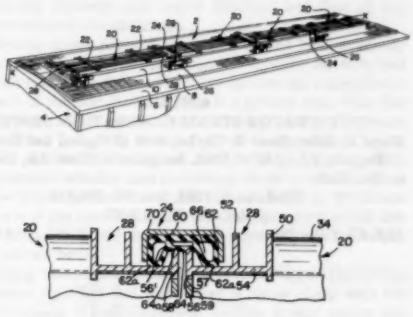
a pair of end cross members respectively affixed to the ends of said panel means to add strength thereto;

at least a portion of said panel means having a corrugated surface;

strap means affixed to said panel means and extending thereacross at a position between said end cross members to further strengthen said panel means;

said strap means includes means to mount said panel means for pivotal movement on a railroad car;

said corrugated portion of said panel means forms low and high areas on the surface of said panel means, said low areas acting to collect water therein for drainage wherein said end cross members includes channel means disposed in fluid communication with said low areas to drain fluid therefrom, said channel means being formed by two vertical walls extending laterally, port means through one of said walls for creating fluid communication between said low areas and said channel means; and



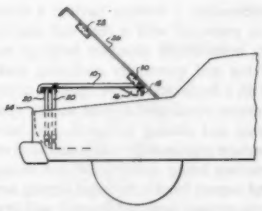
each of said end cross members form at least one channel to receive the fluid and drain the fluid along the end of the panel members.

4,452,151

TRUNK LID FOLDING TABLE

George A. Jarrard, 106 Sandy Creek Ct., Greer, S.C. 29651

Filed Dec. 9, 1981, Ser. No. 328,830
Int. Cl.³ A47B *37/00*
U.S. Cl. 108—44 **1 Claim**



1. A folding table and carrying support for use in an automobile having a trunk compartment with a trunk lid extending over the compartment and being connected adjacent an inner end thereof by hinges for providing access to said compartment, comprising:

means for pivotally attaching a front end of said table to the bottom side of said trunk lid with said rear end of said table terminating within the trunk of said automobile;

means for removably attaching said rear end of said table to the bottom side of said trunk lid for cooperating with said means for pivotally attaching said front end securely holding said table on the bottom of said trunk lid when transporting said table in said trunk;

a pair of telescoping legs carried in the corners of said table adjacent said rear end of said table, and

means for adjusting the length of said legs so that the bottom of said legs rests on the bottom of said trunk when said front end of said table is pivotally attached to said trunk lid supporting the table in a horizontal plane with said

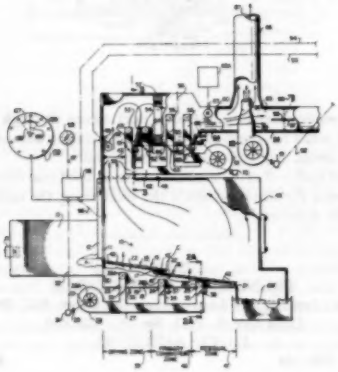
trunk lid being raised and extending over said table and for adjusting the length of said legs to rest on the ground when said table is removed from said trunk and said front end of said table rests on the edge of said trunk compartment.

4,452,152

INCINERATOR STEAM GENERATION SYSTEM

Floyd C. John; Scott R. Taylor, both of Ogden, and Gerald B. Taggart, Eden, all of Utah, assignors to Clear Air, Inc., Ogden, Utah

Filed Jul. 8, 1982, Ser. No. 396,421
Int. Cl.³ F23G 5/08
U.S. Cl. 110—235 2 Claims



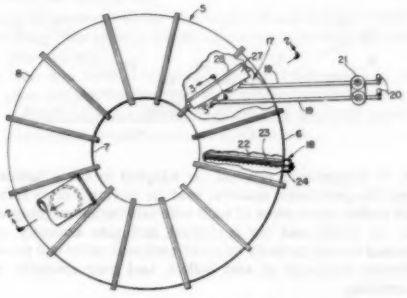
1. In combination, a furnace having: a declining, movable grate system provided with a feed end and an opposite discharge end; horizontally elongate housing means longitudinally receiving and essentially enclosing said grate system, provided with a feedstock access opening proximate said feed end, door means positioned at said access opening for selectively opening and closing the same, and having an updraft conduit structure proximately above said feed end, said updraft conduit structure being constructed and arranged to receive moisture and vapors from a proximal drying zone of said grate system proximate said feed end thereof, said drying zone being followed by a combustion zone horizontally displaced from said updraft conduit and then a residual zone remote from said updraft conduit and proximate said discharge end, said housing means having a top wall extending over said grate system at said combustion and residual zones of said grate system, said housing means also having first air-inlet means proximate said proximal drying zone for introducing a desired volume of air thereat, second air-inlet means proximate said combustion zone for introducing an increased volume of air thereat, and third constricted-air-inlet means proximate said residual zone for introducing a reduced volume of air thereat, said housing means thereby being constructed, by virtue of the inclusion of said first, second, and third air-inlet means, to produce an essentially quiescent area over said residual zone and a low velocity condition above said combustion zone, whereby to reduce to a desired minimum, entrainment of combustion-resultant particulates in gases rising from said grate system, said housing means also including a lower, water-seal discharge end proximate and beneath said grate system discharge end and remote from said updraft conduit structure.

4,452,153

ROTARY HEARTH PYROLYZER WITH TAPERED SPREADER ROLL

Kenneth S. Deseau, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 19, 1982, Ser. No. 340,650
Int. Cl.³ F23G 5/04
U.S. Cl. 110—247 9 Claims



1. A pyrolyzer, comprising:

(a) a housing having an annular chamber generally sealed from the ambient atmosphere, the housing including an inlet through which material, to be pyrolyzed, enters the chamber and an outlet through which pyrolyzed material exits the chamber;

(b) an annular hearth disposed in the chamber for supporting the material as it is being pyrolyzed, the hearth having a curved inner periphery in radially spaced relation from a curved outer periphery which is circumferentially longer than the inner periphery;

(c) means for mounting the hearth for rotation in a horizontal plane about a fixed vertical axis;

(d) a roll disposed in the hearth just downstream from the inlet, relative to the direction of movement of the hearth, for contacting material charged to the hearth and spreading it evenly on the hearth, the spreader roll extending transversely of the hearth and being conically tapered in circumferentially decreasing size in the direction of the inner periphery of the hearth.

4,452,154

PROCESS AND APPARATUS FOR DRY DISTILLATION OF DISCARDED RUBBER TIRES

Hiroshi Kono, and Haruhiko Asao, both of Iwaki, Japan, assignors to Onahama Seiren Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,267
Claims priority, application Japan, Aug. 4, 1981, 56-121429; Sep. 14, 1981, 56-143806; Sep. 14, 1981, 56-143807
Int. Cl.³ F23G 5/00
U.S. Cl. 110—346 3 Claims

1. A process for the dry distillation of discarded tires with metal wire embedded therein, comprising the steps of:

charging the tires in a randomly stacked state into the upper part of a vertical furnace whose horizontal cross-sectional area of its interior at its lower part is equal to, or greater than the cross-sectional areas at higher parts of the furnace;

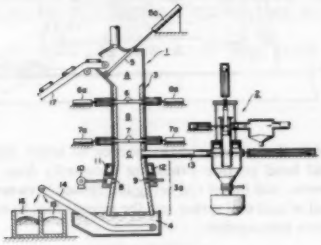
causing the thus-stacked tires to descend progressively into a reaction chamber provided in the lower part of the furnace and having an open bottom sealed by a pool of liquid;

isolating the reaction chamber from the upper interior of the furnace after the tires have been charged thereinto in a randomly stacked state;

causing the lower tires within the reaction chamber to un-

dergo oxidation combustion while dry distilling the upper tires within the reaction chamber with the resulting combustion bases by introducing oxygen into the lowest portion of the furnace in amounts sufficient to substantially combust the carbon in the tires, but insufficient to burn the volatile combustible substances produced from the dry distillation of the tires at the upper portion of the furnace, said oxidation combustion and said dry distillation of the tires producing a tire residue comprising the metal wire in the bottom part of the reaction chamber;

braking the descent of the tires, which are being subjected to the oxidation combustion and dry distillation, by a temporarily self-formed and self-sustained grate effect of the



solid residue composed predominantly of metal wire sticking to the inner wall of the reaction chamber;

removing the metal wire which descends to the bottom of the reaction chamber as the tires move downward making use of the cross-sectional area of the lower part of the furnace, which is as large or larger than the upper portion of the furnace, while leaving the upper part of the wire containing residue working as a grate as it is periodically formed on the inner wall of the furnace;

collecting distilled gaseous fuel and/or liquid fuel from within the reaction chamber while the distillation is carried out; and

separating carbon particles from the collected fuel by means of a device for separating said carbon particles.

4,452,155

METHOD FOR INCINERATING MATERIAL

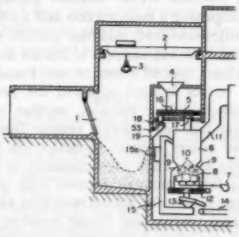
Hideo Ishihara; Takahiro Ohshita, and Harumitsu Saito, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Division of Ser. No. 319,875, Nov. 9, 1981, Pat. No. 4,419,330. This application Aug. 10, 1983, Ser. No. 521,920

Claims priority, application Japan, Jan. 27, 1981, 56-10520; Jan. 29, 1981, 56-10841

Int. Cl.³ F23D *19/00*

U.S. Cl. 110—346 **8 Claims**



1. A method for incinerating material in a vertical fluidized bed type reactor a horizontal cross section of which is generally rectangular, said reactor being provided with opposing side walls, a bottom diffusion means and a fluidizing medium charged on said diffusion means;

supplying fluidizing gas upwardly at the center part of said diffusion means to form a center fluidized bed;

supplying fluidizing gas upwardly at the opposite sides of said center portion of said diffusion means and adjacent said side walls, respectively to form side fluidized beds directly adjacent said center fluidized bed free of any obstructions therebetween;

deflecting upper parts of the side fluidized beds generally laterally towards the upper part of the center fluidized bed with regulating the gas supply so that the gas is supplied at each of the side fluidized beds in a greater mass than that supplied at the center fluidized bed whereby the center fluidized bed tends to move downwardly relative to the side fluidized beds and all of the fluidized beds exhibit generally whirling and circulating mode as a whole from the lower part of the center fluidized bed to the lower parts of the side fluidized beds, the upper parts of the side fluidized beds and thence to the upper part of the center fluidized bed;

charging material to be incinerated to the upper part of the center fluidized bed and letting it move along with the movement of said fluidizing medium in said center and side fluidized beds; and

discharging incombustible residue of said material at the portions adjacent the opposite sides of said diffusion means while the operations above are continued.

4,452,156

VARIABLE THREAD TENSIONER FOR EMBROIDERY MACHINES

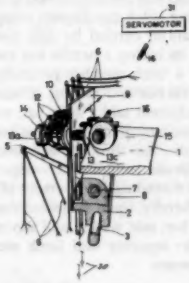
Wolfgang Teetz, Kerken; Heinz-Georg Slomma, Viersen, and Hans-Gerd Ripkens, Goch, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 235,283

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008735

Int. Cl.³ D05C *11/08*

U.S. Cl. 112—97 **16 Claims**



1. In a device for adjusting the thread tension on a multi-needle automatic embroidery machine having embroidery needles and a thread lever associated with each needle, a thread brake for each said thread lever, the thread brake having two brake discs between which there extends a thread which is guided over the associated thread lever to the associated needle, a spring for pressing the brake discs against each other, one of the brake discs being displaceable relative to the other brake disc in order to change the thread tension, a plurality of bolts, each of said bolts is displaceably mounted relative to both of said brake discs of each of said thread brakes respectively and is formed with an abutment means, the displaceable one of said brake discs of each said thread brake is mounted on one of said

bolts, respectively, said abutment means is for carrying along said displaceable one of said brake discs, respectively, the improvement comprising

cam means for displacing one of said bolts, respectively from time to time,

a camshaft on which said cam means is arranged,

a first and a second separate structural part are displaceable relative to each other in a longitudinal direction of said camshaft, and

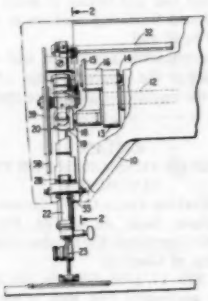
said thread brakes are mounted in said first structural part and said camshaft is mounted in said second structural part.

4,452,157

BASTING STITCH MECHANISM

Edilberto Cantada, East Brunswick, N.J., and Anthony D. Spasiano, Old Greenwich, Conn., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 19, 1982, Ser. No. 369,431
Int. Cl.³ D05B *69/00*
U.S. Cl. 112—221 **5 Claims**



1. A basting stitch mechanism for a sewing machine having a frame, an endwise reciprocable needle bar supported by said frame, an actuating mechanism carried in said sewing machine frame, said basting stitch mechanism comprising:

a latch mechanism carried by said needle bar, said latch mechanism including a needle bar carrier affixed to said needle bar, a latch member pivotally connected to said needle bar carrier and having at least a portion thereof extending adjacent said needle bar; means driven by said actuating mechanism for imparting endwise reciprocation to said needle bar through said latch mechanism, said imparting means including a wedge and a cooperating notch, both extending transversely of said endwise reciprocation; whereby, upon a selected resistence to motion of said needle bar, said wedge will slip out of said cooperating notch to separate said latch mechanism from said imparting means.

4,452,158

PRESSER FOOT CONTROL FOR SEWING MACHINES

Giovanni De Palma, S. Fermo, and Bruno Motta, Milan, both of Italy, assignors to Rockwell-Rimoldi S.p.A., Milan, Italy

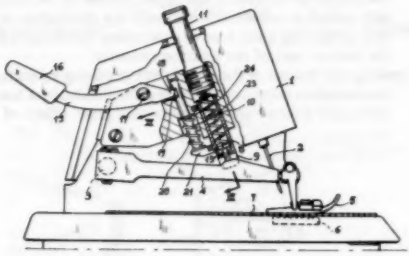
Filed Apr. 30, 1982, Ser. No. 373,480
Claims priority, application Italy, Jun. 2, 1981, 22097 A/81
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—235 **2 Claims**

1. A low-inertia presser device for sewing machines of the type having a head with an elongated arm mounted thereto for supporting the macine's presser foot in operative association with its feed dog and work surface, said presser device comprising:

(a) a guide sleeve (8) mounted in the head including: (i) a bifurcated lower end (9) straddling the elongated arm to prevent lateral movement thereof;

(b) a coil spring (10) housed within said guide sleeve; and

(c) a thrust rod (13) having a head portion disposed in sliding contact with the lower portion of the inner wall of said



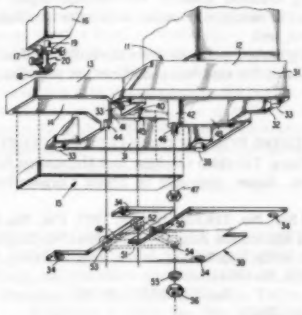
guide sleeve and a shank portion of lesser diameter than said head portion extending outwardly from said guide sleeve, said thrust rod being interposed between the lower end of said coil spring and the presser foot to exert biasing force thereagainst.

4,452,159

REINFORCING FOR MOLDED SEWING MACHINE FRAME

Leo E. McGann, Cranford, and Kenneth D. Adams, Madison, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 7, 1983, Ser. No. 472,450
Int. Cl.³ D05B *73/00*
U.S. Cl. 112—258 **3 Claims**



1. A sewing machine frame member including a sewing machine bed comprising a base portion and a work supporting tubular arm cantilevered from said base portion and adapted to have forces applied thereto incident to the use and operation of said sewing machine, spaced bosses on said frame member, one of said spaced bosses located adjacent the juncture of said tubular arm with said base portion, another of said spaced bosses located on said base portion remote from said tubular arm, said spaced bosses subject to deflection in a direction toward and away from each other incident to application of said forces, said frame member formed with an opening between said spaced bosses for accommodation and assembly of sewing mechanism within said frame member, a detachable cover element for said frame member enclosing at least the base portion of said sewing machine frame member, a reinforcing rib carried by said detachable cover element and adapted to span the opening between said spaced deflectable sewing machine frame bosses when said detachable cover element is

arranged in place relatively to said sewing machine frame member, and means rigidly connecting said reinforcing rib directly to each of said spaced bosses on said sewing machine frame member, said connecting means also maintaining said cover element in place relatively to said sewing machine frame.

4,452,160

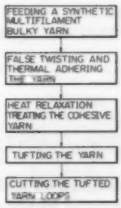
METHOD OF MANUFACTURING A CUT PILE CARPET

Koji Tajiri; Mikio Oohara, and Kiyoshi Maruo, all of Mihara, Japan, assignors to Teijin Limited, Hiroshima, Japan

Continuation of Ser. No. 112,465, Jan. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 56,843, Jul. 12, 1979, Pat. No. 4,355,592. This application Nov. 12, 1982, Ser. No. 441,239

Int. Cl.³ D02G *1/02*; D06C *27/00*; D05C *17/02*

U.S. Cl. 112—410 **2 Claims**


FEEDING A SYNTHETIC MULTIFILAMENT BULKY YARN
FALSE TWISTING AND THERMAL ADHERING THE YARN
HEAT RELAXATION TREATING THE COHESIVE YARN
TUFTING THE YARN
CUTTING THE TUFTED YARN LOOPS

1. A process for manufacturing a cut pile carpet, comprising the steps of:

(a) feeding a bulky polyamide multifilament yarn to a device for false twisting and heat setting, so that (i) false twists between 100 twists per meter and 1000 twists per meter are imparted into said bulky yarn, and (ii) while said false twists are maintained in said yarn, said bulky yarn is heat set so that filaments composing said yarn are thermally and partially adhered to each other, said heat set bulky yarn including S twist portions and Z twist portions;

(b) taking up said false twisted and heat set yarn while thermal and partial adhesions remain therein, to provide a cohesive bulky synthetic multifilament yarn having alternate twists with S twist portions and z twist portions being distributed randomly along the lengthwise direction of the yarn, with said yarn having a total crimp between 3% and 15%, a coherent factor between 5 and 100, and a latent torque index between 60 twists per meter and 300 twists per meter, and an adherent ratio between 0.5% and 40%;

(c) heat relaxation treating said cohesive bulky synthetic multifilament yarn under a constrained condition so that said latent torque index of said cohesive bulky synthetic multifilament yarn is decreased to less than 60 twists per meter;

(d) tufting said heat relaxation treated cohesive bulky synthetic multifilament yarn as a pile yarn on a substrate; and

(e) cutting the loops of said pile yarn so as to create cut piles.

4,452,161

HOOK FOR ATTACHING RIDER TO BOARD SAILER

Donald G. McCoy, 69 Penfold Rd., Rosslyn Park, Australia

PCT No. PCT/AU81/00109, 371 Date Apr. 12, 1982, 102(e) Date Apr. 12, 1982, PCT Pub. No. WO82/00448, PCT Pub. Date Feb. 18, 1982

PCT Filed Aug. 11, 1981, Ser. No. 371,299

Claims priority, application Australia, Aug. 11, 1980, PE4975

Int. Cl.³ B63B *9/08*

U.S. Cl. 114—39 **4 Claims**

1. A quick-release apparatus for attaching a rider to a board sailer comprising:

a base member;

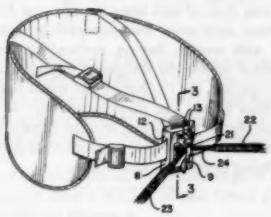
a support member extending outwardly from said base member;

a hooking member pivotally supported on said support member for rotation in a plane perpendicular to said base member;

said hooking member comprising a latching end portion extending toward said base member and a curved hook portion extending away from and curved back toward said base member;

a trigger member comprising a tongue fixed to said base member beneath said hooking member and having one end resiliantly biased outwardly to engage said latching end portion;

an abutment member mounted on said trigger member tongue and extending into said hook portion of said hooking member to form a spaced area therebetween; and



a flexible rope means having a center portion of a diameter smaller than said spaced area and end portions of a diameter larger than said spaced area, said center portion being adapted to engage said hook portion of said hooking member and be laterally slidable between said hooking member and said abutment member, whereby lateral movement of said rope means within said spaced area to a postion where said larger diameter end portion comes between said hook portion and said abutment member will cause said trigger member to be urged toward said base member, thereby disengaging said trigger member from said latching portion and permitting said hook portion of said hooking member to pivot away from said base member and disengage said rope means.

4,452,162

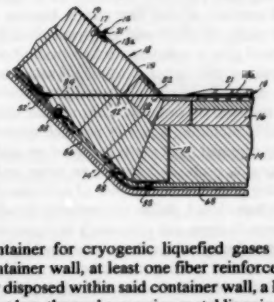
CORNER STRUCTURE FOR CRYOGENIC INSULATION SYSTEM

Donal E. Harbaugh, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 909,929, May 26, 1978, abandoned. This application Apr. 19, 1983, Ser. No. 484,358

Int. Cl.³ B63B *25/08*

U.S. Cl. 114—74 A **4 Claims**



1. A container for cryogenic liquefied gases which comprises a container wall, at least one fiber reinforced foam insulation layer disposed within said container wall, a low temperature resistant low thermal expansion metal liner in contact with

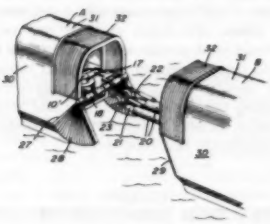
the inner side of said at least one foam insulation layer, said container having corners and including at least one corner structure, said corner structure comprising a corner support, said corner support being disposed in said at least one foam insulation layer adjacent said metal liner at said corner of said container wall, a low temperature resistant low thermal expansion metal angle member, means connecting said metal liner to said angle member, means connecting said angle member to said corner support, a plurality of metal strips, means connecting said metal strips adjacent one end therof to said angle member, and means connecting said metal strips adjacent the other end thereof to the wall of said container, said strips comprised of a metal having low thermal conductivity and high strength, said strips transmitting loads from only one face of said metal liner at said corner to the wall of said container, said plurality of metal strips consisting of spaced substantially parallel strips, all of said strips being substantially in the plane of said one face of said liner in only one direction thereof at said corner, said metal liner comprising a plurality of parallel strakes, said strakes having upstanding flanges along their longitudinal edges, the flanges of adjacent strakes being connected together, the flanges of said metal liner in said one face of said liner in said one direction thereof at said corner being perpendicular to the corner, and the flanges of said metal liner in another face of said liner in another direction thereof at said corner being parallel to said corner.

4,452,163

ARTICULATED COACH COUPLING MEANS

Aboudourahim Ayeva, 635, boulevard Laurentien, Saint-Laurent, Canada H4M 2M2

Filed Feb. 25, 1982, Ser. No. 352,247
Int. Cl.³ B63B *3/08*
U.S. Cl. 114—77 R **4 Claims**



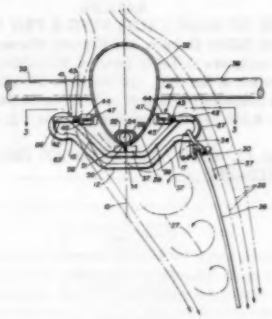
1. An articulated coupling means for a first elongated and a second elongated coach adapted to be linked together; said articulated coupling means comprising a first assembly of coupling elements, carried by one end of said first coach, a complementary second assembly of coupling elements carried by one end of said second coach; said first assembly including an upright king-post rotatably mounted in a rigid casing secured to said one end of said first coach; bearing means provided in said casing to allow said king-post pivotal movement about its vertical axis; a transverse substantially horizontal rod rigidly secured to the upper portion of said king-post and extending on each side of said post; two jaw-receiving sleeves surrounding said rod on opposite sides of said king-post; said second assembly including a pair of parallel, spaced-apart and longitudinally-oriented rigid shafts mounted on said one end of said second coach, each shaft having an outer end, each said outer end being provided with a pair of articulated jaw members which, when closed, define a transverse circular opening, actuating means to open and close each said pair of jaw members, the latter being adapted to grasp said jaw-receiving sleeves; and a second bearing means between said jaw-receiving sleeves and said rod thereby allowing pitch movement between the said first and second assembly of elements.

4,452,164

SAIL-ATTACHING DEVICE

William L. Dejager, 43094 Via Moraga, Fremont, Calif. 94539

Continuation of Ser. No. 174,346, Jul. 31, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,938
Int. Cl.³ B63H *9/08*
U.S. Cl. 114—112 **3 Claims**



1. Sail luff to mast mounting means for a sailing vessel comprising:

a plurality of devices adapted for mounting for independent vertical guided movement on said mast and providing in mast-mounted position a plurality of vertically superimposed continuous and substantially horizontally disposed tracks each having:

(a) a mid-portion confined at the stern side of said mast for vertical reciprocation on substantially the fore and aft center plane of said mast,

(b) a horizontally disposed length providing opposite ends of said track projecting simultaneously beyond the port and starboard sides of said mast by a distance ranging from about one-quarter of the full athwart ship dimension of said mast to about the full athwart ship dimension of said mast,

(c) said tracks being formed for support of and for reciprocation thereon between said opposite ends of luff-attaching means,

said devices being adapted for connection at substantially equal intervals for hoisting said devices and sail luff on said mast, and

means connected to each of said tracks and formed to engage with and to vertically reciprocate upon said mast for limiting rotary displacement of said tracks in a horizontal plane and fore and aft displacement of said ends.

4,452,165

METHOD AND APPARATUS FOR SUPPRESSING HEAVE IN A FLOATING STRUCTURE

Gunnar B. Bergman, Santa Barbara, Calif., assignor to Seatek Corporation, Goleta, Calif.

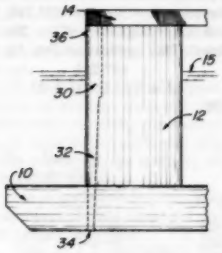
Filed Nov. 27, 1981, Ser. No. 325,559
Int. Cl.³ B63B *39/03*
U.S. Cl. 114—125 **15 Claims**

1. Apparatus for stabilizing a semisubmersible platform having a plurality of flotation means, said system comprising:

One or more tanks, having open access to ambient air, mounted on the flotation means at a point where the ambient surface of the water intersects the flotation means; and

One or more ducts, each having one end coupled to each of the tanks at a point below the ambient surface of the water, the other end of which having open access to the water at a point below the lowest point of each of the tanks;

Said ducts having a cross-sectional area which varies over substantially their entire length, the maximum cross-sectional area of said ducts being substantially less than the



maximum cross-sectional area of the tanks, so that the resonant period of each tank and duct combination is approximately equal to the resonant heave period of the platform.

4,452,166

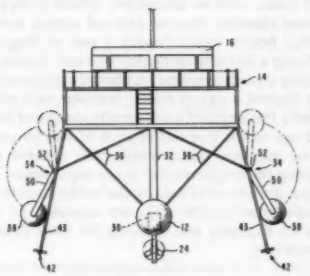
FOIL STABILIZED MONOHULL VESSEL

Nathan I. Daniel, 948 Kailiu Pl., Honolulu, Hi. 96825

Filed Nov. 20, 1981, Ser. No. 323,378

Int. Cl.³ B63B *1/30*

U.S. Cl. 114—282 **8 Claims**



1. A foil-stabilized monohull vessel comprising:

a central elongated hull and propulsion and rudder means mounted on said vessel; deck means mounted on said hull and disposed thereover, for housing passengers, crew, or cargo, said deck means having a port side and a starboard side disposed parallel to the longitudinal axis of said hull;

first and second outrigger means mounted, respectively, at the port and starboard sides of said deck means, said outrigger means including stabilizer foils adapted to stabilize said vessel against roll, said foils being mounted at the distal end of a vertical support depending from said deck means, and float means for stabilizing said vessel when said vessel is at rest or at low speeds; and

means carried by said vessel for minimizing drag created by said float means when said vessel is at cruising speed by effectively eliminating support for said vessel by said float means, said means for minimizing drag permitting said vessel at cruising speed to be supported at the water surface by said hull and stabilized by said foils;

said float means and means for minimizing drag further comprising a plurality of float members carried by said vessel and means for selectively moving said float members between a water displacement condition wherein said members stabilize said deck means and a suspended position wherein said members do not displace water.

4,452,167

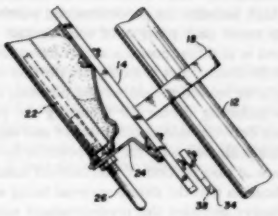
FLAG MOUNTING DEVICE

W. Stanley Burroughs, 3825 N. Wakefield St., Arlington, Va. 22207

Filed Feb. 8, 1982, Ser. No. 346,911

Int. Cl.³ G09F *17/00*

U.S. Cl. 116—173 **2 Claims**



1. An apparatus for mounting a flag on a flagpole to prevent twisting of the flag around the pole, said apparatus comprising:

a support member connected to one side of said flag;

means for mounting said support member on said flagpole and permitting rotation of the support member around said flagpole;

semi-flexible rod means mounted on a lower edge of said flag for maintaining at least a portion of said lower edge in a substantially straight line;

hinge means for pivotally mounting said semi-flexible rod means on a lower portion of said support member, said hinge means comprising means for permitting movement of said semi-flexible rod means relative to said support member only in a plane including said flagpole and said support member; and

latch means for detachably maintaining said semi-flexible rod means in a position substantially perpendicular to said support member.

4,452,168

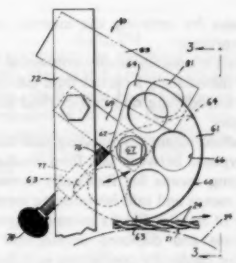
APPARATUS FOR DETECTING BREAKS IN STRAND MATERIAL

William C. Gause, Baltimore, Md., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,156

Int. Cl.³ D01H *13/16*; B65H *25/10*

U.S. Cl. 116—200 **7 Claims**



1. An apparatus for detecting strand material which comprises a predetermined number of conductors, said apparatus comprising:

a rotatably mounted sheave for guiding the strand material;

moving means for advancing successive increments of the strand material into and out of engagement with said sheave;

contact means spaced a predetermined distance from said

sheave for engaging the strand material when the strand material includes a predetermined number of conductors, said contact means having a portion which is adapted to be moved from a first position to a second position when one of the conductors is missing;

mounting means for supporting said contact means the predetermined distance from said sheave to cause sufficient engagement between said contact means and strand material which includes the predetermined number of conductors to cause said portion of said contact means to be disposed in said first position and in the absence of at least one of the conductors to cause said portion of said contact means to be moved to said second position, said mounting means including means for adjusting the predetermined distance between said contact means and said sheave; and

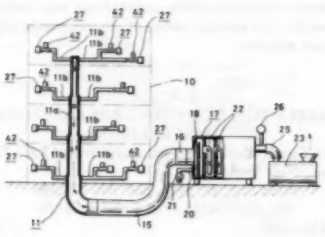
sensor means aligned with the first position for detecting the presence of said portion of said contact means to provide an indication that the strand material being advanced past said sheave includes the predetermined number of conductors and for detecting the absence of said portion of said contact means to provide an indication that the strand material does not include the predetermined number of conductors.

4,452,169

REVIVING APPARATUS FOR FLUID PASSAGES

Shinichi Matsuda, 32-14, Higiriyama 1-chome, Konan-ku, Yokohama 233, Japan, assignor to Shinich Matsuda and Marubeni Construction Machinery Sales, Inc., both of Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,083
Int. Cl.³ B05C *7/02*
U.S. Cl. 118—50 **13 Claims**



1. Apparatus for reviving the interior surface of a fluid passage, comprising:

fluid conduit means fluidically connected to said fluid passage for introducing a carrier fluid into said fluid passage;

means for introducing said carrier fluid into said fluid conduit means;

single manifold means surrounding said fluid conduit means and interposed between said fluid conduit means and said introducing means for fluidically connecting said fluid conduit means and said introducing means;

a plurality of nozzles fixedly mounted upon said fluid conduit means and disposed within said single manifold means, for fluidically connecting said fluid conduit means and said single manifold means and, for imparting to said carrier fluid a spirally rotative flow pattern within said fluid conduit means and said fluid passage; and

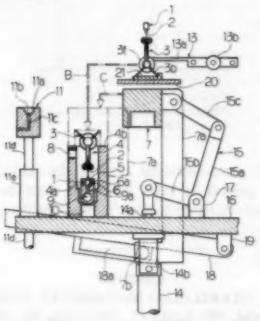
means for fluidically connecting a supply of reviving material with said fluid conduit means for introduction into said spirally rotatively flowing carrier fluid within said fluid conduit means for transmission in said spirally rotative flowing pattern into said fluid passage for revival of the interior surface of said fluid passage.

4,452,170

ELECTROLYTE IMPREGNATING DEVICE FOR CAPACITOR ELEMENTS

Katsumori Omata, Tokyo, Japan, assignor to Far East Engineering Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 327,218, Dec. 3, 1982, abandoned, which is a continuation of Ser. No. 153,008, May 27, 1980, abandoned. This application Jan. 11, 1983, Ser. No. 457,214
Int. Cl.³ B05C *3/02*
U.S. Cl. 118—50 **4 Claims**



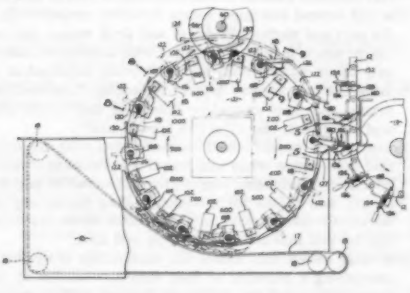
1. Apparatus for processing capacitor elements in a chamber vacuumized to impregnate the capacitor elements, each having a pair of leads, with an electrolyte which is supplied to the vacuumized chamber from an external supply, said apparatus comprising: holder means having a pair of hinged elements each defining a laterally elongated free end thereon for releasably holding a predetermined number of capacitor elements by the leads thereof, a pair of elastic members each elongated for substantially the length of said laterally elongated free ends and mounted one on the free end of each of said hinged elements, said elastic members being transversely severed at intervals spaced along the length thereof in correspondence to the spacing of capacitor elements held by the holder thereby to provide individually compressible adjacent segments of said elastic members for engaging and retaining the leads of each capacitor, respectively.

4,452,171

MATERIAL HANDLING APPARATUS

Jess Browning, 4217 Via Pinzon, Palos Verdes Estates, Calif. 90274

Filed Jul. 16, 1982, Ser. No. 398,869
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—58 **14 Claims**



1. An automatic coating and material handling machine for coating a plurality of objects, each object having a first magnetic end and a second end, comprising:

revolving drum means having magnetic means for attracting the plurality of magnetic ends and having a receiving means adjacent and parallel to said magnetic means for containing the plurality of second ends of the objects,

clamping means for confining the plurality of second ends of the objects within said receiving means, wherein said receiving means is revolved whereby the plurality of magnetic ends are exposed,

conveyor means having a plurality of gripper means for gripping the plurality of exposed magnetic ends, said clamping means simultaneously releasing the second ends such that the second ends hang underneath said gripper means, said conveyor means conveying the plurality of gripped objects through the machine, and

coating means for uniformly coating the exposed second ends of said gripped objects on said conveyor means such that the magnetic ends remain uncoated.

4,452,172

GUMMER FOR CIGARETTE FILTER ATTACHMENT MACHINES

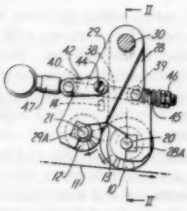
Derek H. Dyett; Dennis G. Troll, and John K. Horsley, all of High Wycombe, England, assignors to Molins Limited, London, England

Continuation of Ser. No. 215,338, Dec. 11, 1980, abandoned. This application Jun. 18, 1982, Ser. No. 389,967

Claims priority, application United Kingdom, Dec. 11, 1979, 7942571

Int. Cl.³ B05C *1/08*

U.S. Cl. 118—203 **14 Claims**



1. A gummer comprising a roller, means for forming a pool of gum along and adjacent to the roller, from which pool the roller is arranged to carry a film of gum for transfer to a moving web, characterized in that the means for forming the pool of gum comprises means for delivering gum continuously into the pool, at a position between the ends of the roller, at a rate in excess of the rate at which the roller is arranged to carry gum from the pool, the pool being formed as a stream flowing from the delivery position towards the ends of the roller, and including means for collecting excess gum from each end of the roller and for returning it to a source of the gum, said gum collecting means at each end of the roller being arranged to allow gum to flow substantially without restriction to the extremity of the peripheral surface of the roller and to continue as an unconfined bead of excess gum extending around part of the periphery of the roller at the said extremity, and said gum collecting means including means for guiding the said bead of gum downwardly from the roller.

4,452,173

MAGNETIC BRUSH DEVELOPING APPARATUS

Kenji Tabuchi, and Tateki Oka, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1982, Ser. No. 413,435

Claims priority, application Japan, Sep. 4, 1981, 56-140066

Int. Cl.³ G03G *15/09, 21/00*

U.S. Cl. 118—652 **5 Claims**

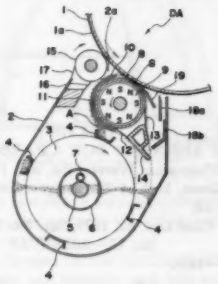
1. A magnetic brush developing apparatus for use in an electrographic copying apparatus and the like having a developing region and employing a developing material having magnetic carrier particles and electrically insulative toner particles, which apparatus comprises:

a developing sleeve having the surface thereof adjacent the developing region and driven for rotation in one direction;

a magnetic roller rotatably disposed within said developing sleeve and driven for rotation in said one direction;

means, located at a developing material supply position spaced from said developing region, for supplying fresh developing material;

a developing material transport guide member spaced from said developing sleeve and extending from said developing material supply position to the vicinity of said developing region, with a clearance between said developing material transport guide member and the outer peripheral surface of said developing sleeve;



means for driving said magnetic roller at a speed sufficiently greater than the speed of said developing sleeve for causing fresh developing material supplied at said developing material supply position to be transported over the outer surface of said developing material transport guide member in the direction opposite to said one direction to said developing region by the rotation of said magnetic roller and to cause part of the used developing material to move from said developing region through said clearance in said one direction by the rotation of said developing sleeve; and

cleaning means for removing from the outer peripheral surface of said developing sleeve developing material moving through said clearance from the developing region.

4,452,174

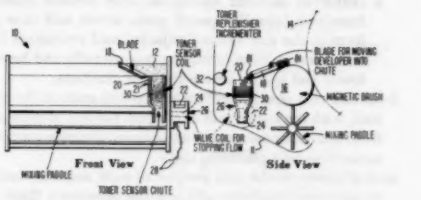
TONER CONCENTRATION SENSOR ASSEMBLY FOR ELECTRO-PHOTOGRAPHIC APPARATUS

Richard C. Fedder, 106 Eastern Fork, Longwood, Fla. 32750

Continuation-in-part of Ser. No. 429,861, Sep. 30, 1982, abandoned. This application Aug. 22, 1983, Ser. No. 525,259

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—689 **8 Claims**



1. A toner developer concentration sensor assembly for an electrophotographic printing/copying apparatus comprising:

demountable, removable, replaceable electrophotographic toner cartridge means for renewing the concentration of toner in developer mix used in said apparatus;

means through which said used developer is automatically moved for determining the concentration of toner in said used developer mix;

means for immobilizing said used developer within said concentration determining means;

inductive means surrounding said concentration determining means for indicating the change in permeability of said used developer mix when and thus the immobilized toner concentration of said mix as compared to a preset level of concentration; and

means operably connected to said inductive means for automatically, incrementally adding toner to said used developer mix in accordance with the indicated change in toner concentration of said used developer mix.

4,452,175

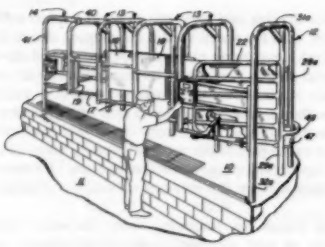
POST ASSEMBLY FOR A PARLOR STALL

Duncan M. Thompson, Warrenville, and Harold V. Swanson, Downers Grove, both of Ill., assignors to Babson Bros. Co., Oakbrook, Ill.

Filed Oct. 25, 1979, Ser. No. 87,979

Int. Cl.³ A01K *1/12*

U.S. Cl. 119—14.03 **1 Claim**



1. In a stall for a milking parlor having an elevated cow platform with an operator's floor extending along one side thereof and a curb having a flange extending outwardly at an angle on the order of 45° on the one platform side, said stall having longitudinal elements on each side of said platform to restrain the cows during milking, the improvement comprising:

a plurality of improved stall post assemblies to which said longitudinal elements are secured, each assembly having

a pair of laterally spaced posts secured to said platform on the side thereof remote from said operator's floor, and

a cantilever member having an arch portion extending from said laterally spaced posts across said cow platform to the side thereof adjacent said operator's floor, and a post portion extending downwardly and having a lower end spaced above the cow platform;

front and rear post assemblies at opposite ends of the parlor stall, with the lower ends of the post portion of each of the front and rear post assemblies adjacent the operator's floor secured to said platform; and

anchor plates on the post portion of each assembly secured to said cow platform adjacent the operator's floor, said plates lying in a plane at an angle on the order of 45° to the surface of said cow platform and secured to the platform curb.

4,452,176

MILK FLOW METER

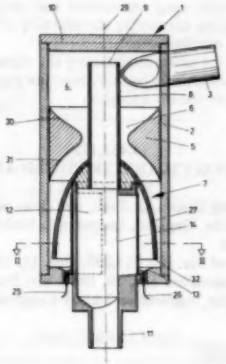
Tilman Hoefelmayr, Niederteufen, Switzerland, and Jakob Maier, Türkheim, Fed. Rep. of Germany, assignors to Bio-Melktechnik Hoefelmayr & Co., Niederteufen, Switzerland

Filed Jan. 12, 1982, Ser. No. 338,930

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101302

Int. Cl.³ A01J *7/00*

U.S. Cl. 119—14.17 **36 Claims**



1. In a milk flow meter which includes means defining a collecting chamber, means for supplying milk tangentially into said collecting chamber, means defining a measuring chamber, means providing continuous fluid communication between said collecting chamber and said measuring chamber, and a milk-discharge line communicating with said measuring chamber, the improvement comprising wherein said measuring chamber has a partition wall which, in the region of a lower end thereof, has means defining a transfer opening which provides fluid communication between first and second portions of said measuring chamber which are located on opposite sides of said partition wall, said means for providing fluid communication between said collecting and said measuring chambers being in communication with said first portion of said measuring chamber, said measuring chamber having means defining a substantially vertical measuring slot in a wall of said second portion thereof, said discharge line communicating with said second portion of said measuring chamber through said slot, and including means for measuring the level of milk in said second portion of said measuring chamber.

4,452,177

VALVE FOR USE IN A SUCTION LINE

Carl E. Plett, Chino, Calif., assignor to DEC International, Inc., Madison, Wis.

Filed Aug. 25, 1982, Ser. No. 411,546

Int. Cl.³ A01J *5/08*

U.S. Cl. 119—14.32 **16 Claims**

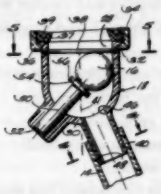
1. A valve assembly for mounting in the outlet of a teat cup assembly comprising:

a valve housing connected to the outlet of a teat cup assembly, said housing having a nipple formed in the bottom portion thereof for connection to a milk suction line;

a ball member mounted inside said valve housing and adapted to seat at the opening from said housing into said nipple when the interior of said housing is exposed to atmospheric pressure; and

a plunger means slidably mounted in the wall of said valve housing, said plunger means adapted to slide inwardly into

said valve housing when the pressure in said housing falls below atmospheric pressure, said inward movement of



said plunger means adapted to dislodge said ball member from its seated position at the nipple opening.

4,452,178

DRIVE CORRIDOR FOR SLAUGHTER CATTLE

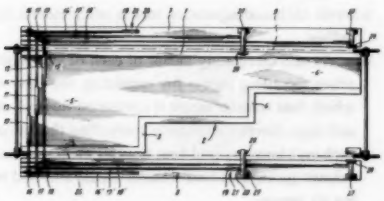
Gerrit J. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G.J. Nijhuis B.V., Netherlands

Filed Aug. 11, 1982, Ser. No. 407,309

Claims priority, application Netherlands, Aug. 14, 1981, 8103823

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—20 **7 Claims**



1. A drive corridor for slaughter animals, comprising:

a corridor having at one side a continuous straight wall and having at the opposite side a wall that is staggered stairwise longitudinally in the direction of forcing along, such that the initial width of the corridor is the width of several animals, and the width of the corridor decreases at staggered stair locations by a distance approximately equal to the width of one animal, until at the end of the corridor, the corridor has a width of only one animal;

the corridor being provided with a fence shaped forcing along device, the forcing along device including a plurality of side by side fence members placed substantially transversely with respect to the direction of forcing along, the fence members having a width substantially equal to the width of a stair, the forcing along device being supported for movement in the direction of forcing along;

drive means being provided to displace the fence members in the direction of forcing along;

and each fence member being disconnectably coupled to the drive means so that movement of a fence member may be stopped at the location where said fence member reaches the stair associated with said fence member.

4,452,179

ADVANCED POULTRY DRINKER CONSTRUCTION

Helmut Rader, McLean, Va., assignor to Monoflo International, Inc., McLean, Va.

Continuation-in-part of Ser. No. 378,491, May 14, 1982, abandoned. This application Jun. 21, 1982, Ser. No. 390,774

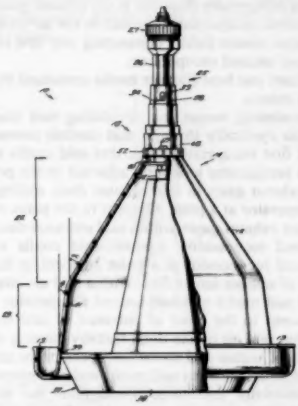
Int. Cl.³ A01K *39/02, 7/02*

U.S. Cl. 119—81 **14 Claims**

8. A cartridge assembly for use in a poultry drinker and comprising:

a plastic tubular member having an annular support surface formed integrally therewith at one end thereof, said annular support surface extending radially outwardly from said tubular member;

an interior shelf formed integrally with said tubular member at a central portion thereof;



means defining a plurality of through-openings in said tubular member on the opposite side of said shelf from said annular support surface; and

external threads formed on said tubular member in an area thereof between said openings and said annular support surface, and a nut for cooperation with said exterior threads.

4,452,180

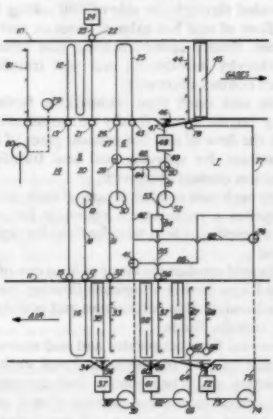
INDIRECT COUNTERFLOW HEAT RECOVERY SYSTEM OF THE REGENERATIVE TYPE FOR STEAM GENERATORS, GAS TURBINES, AND FURNACES AND ENGINES IN GENERAL

Kamal-Eldin Hassan, 40 E. Blueridge Ct., New Orleans, La. 70128

Filed Sep. 30, 1982, Ser. No. 430,281

Int. Cl.³ F22B *33/00*

U.S. Cl. 122—1 A **7 Claims**



1. An indirect heat recovery system of regenerative type for

use between an exhaust gases duct and an air intake duct, comprising:

a. at least one regenerative loop, provided in fluidly connecting relationship between said exhaust gases duct and said air intake duct, and disposed successively in said ducts, wherein each of said loop comprises:

i. a first recuperator disposed in the exhaust gases duct and a second recuperator disposed in the air intake duct;

ii. conduit means fluidly connecting said first recuperator to said second recuperator;

iii. at least one heat transfer media contained by said conduit means;

iv. circulating means for circulating said heat transfer media cyclically through said conduit means, through said first recuperator, such that said media enters said first recuperator at a point adjacent to the point of exit of exhaust gases in said exhaust duct, exiting said first recuperator at a point adjacent to the point of entrance of hot exhaust gases within said entrance duct, and said second recuperator, wherein said media enters said second recuperator at a point adjacent to the point of exit of said air intake flow within said air intake induct, and said media exit said second recuperator at a point adjacent to the point of entrance of said intake gases within said air intake duct, thereby causing within said first and within said second recuperator the temperature differential between said media and said gases to remain substantially maximized throughout the media flow path within said recuperators, thereby causing maxixum effective heat transfer from said exhaust gases duct to said first recuperator and from second recuperator to said air intake duct;

v. control means for controlling the rate of circulation of said heat transfer media cyclically through said conduit means, thereby controlling the amount of heat transferred from said exhaust gases duct to said first recuperator and from said said recuperator to said air intake duct; wherein at least one of said regenerative loops comprises a first recuperator and a second recuperator of the open type, comprising, respectively, application means for introducing said heat transfer media into direct contact with the hot gases being exhausted through said gases duct, and the application means for introducing said air stream being conveyed through said air intake duct;

wherein each of said open type recuperator further comprises a plurality of banks each comprising a length of tubing, fluidly communication with each of said conduit means, disposed substantially in said ducts, wherein each of said banks comprises a plurality of orifices provided through the side of said tubing facing against the flow of said hot exhaust gases or said incoming air stream, fluidly communicating said tubing therewith, for thereby introducing said heat transfer media into direct contact therewith;

wherein said open type recuperator further comprises spray nozzle means fluidly communicating each bank with the flow of said hot exhaust gases of said incoming air stream, for spraying said heat transfer media into direction contact therewith;

wherein each said conduit means of each said loop further comprises a replacement reservoir for containing reserve supplies of heat transfer fluid for replenishing said loops;

wherein said conduit means of at least one of said regenerative loops further comprises filtering means for filtering all undesirable particulates and pollutants from said heat transfer fluids;

wherein said first recuperator and said second recuperator of each of said regenerative loops each comprises a collection means provided in fluid communication with said conduit means downstream of each of said application means, for collecting and conveying substantially all droplets of said heat transfer media which are suspended in said flow of hot exhaust gases or said stream of incoming air, through said conduit means for circulation of said heat transfer media by means of said circulation means, through said conduit means to one recuperator and back through said conduit means to the other recuperator;

wherein each of said collection means comprises a trough provided at the bottom of each of said duct beneath each of said application means, wherein each of said trough comprises a sump fluidly communicating with said conduit means;

wherein said first recuperator and said second recuperator of each of said loop each comprise separator means downstream of each of said bank and above each of said collector means for separating substantially all droplets of said heat transfer media which are suspended in said flow of hot exhaust gases and said incoming air stream therefrom, respectively, wherein each of said separation means is at least the length of each of said bank, and wherein said droplets of said heat transfer media are drained from each of said separation means into each of said collection means and conveyed through each of said sump thereof to said conduit means for circulation thereof;

wherein each said separation means comprises an array of baffles;

wherein said circulating means of each of said loop comprises throttling means for regulating the flow rate at which heat transfer media is circulated through each of said loop, thereby ultimately controlling the rate of heat exchange between said heat transfer media and said hot exhaust gases, said heat transfer media and said incoming air stream;

wherein at least two of said loops disposed successively within said exhaust gases duct and said air intake duct according to the temperature gradients in said ducts, comprise valving means for conveying said heat transfer media from the conduit means of the more downstream loop into the conduit means of the more upstream loop and vice versa, thereby indirectly implementing a parallel flow heat exchange principle to prevent undercooling of said hot exhaust gases when the temperature of said heat transfer media becomes lower than the dew-point of said gases, thereby preventing condensation of said gases on the outer surface of said first recuperator, thereby ultimately preventing corrosion thereof;

wherein it further comprises a water pump operatively associated with said highest temperature regenerative loop, said water pump comprising at least one bank, fluidly connected thereto, disposed substantially across said hot exhaust gas duct, wherein said bank(s) comprise(s) a plurality of passes provided integral to the side of said bank(s) facing against the flow of said hot exhaust gases, and wherein said water pump is actuatable upon the occurrence of the condition whereby the temperature of said hot exhaust gases exceeds a certain, preset value, to spray water through said passes of said bank(s) into said flow of hot exhaust gases, thereby cooling said exhaust gases to an acceptable temperature level.

4,452,181

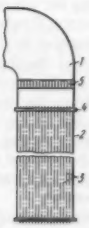
DEVICE FOR HEATING AIR BY FLUE GASES IN STEAM BOILERS AND FURNACES

Adolf U. Lipets, prospekt Lenina, 150a, kv. 38; Mikhail I. Nekrasov, ulitsa Mashinostroitelei, 14, kv. 15, both of Podolsk, Moskovskaya oblast; Alexei Z. Fedosov, ulitsa Burakova, 7, korpus 2, kv. 18, Moscow; Vyacheslav P. Nikolaev, Krasnogvardeisky bulvar, 23, kv. 62, Podolsk, Moskovskaya oblasti; Viktor A. Golev, ulitsa Filippova, 10a, kv. 110, Podolsk, Moskovskaya oblast; Nikolai M. Kurshin, ulitsa Mashinostroitelei, 24a, kv. 22, Podolsk, Moskovskaya oblast; Ivan N. Rozov, ulitsa B. Zelenovskaya, 6, kv. 137, Podolsk, Moskovskaya oblast; Ivan A. Sotnikov, ulitsa Mashinostroitelei, 32, kv. 114, Podolsk, Moskovskaya oblast; Vladimir G. Ovchar, ulitsa Parkovaya, 49, kv. 43, Podolsk, Moskovskaya oblast; Alexandr G. Popov, ulitsa Kaslinskaya, 97a, kv. 33; Anatoly A. Vasiliev, ulitsa Molodogvardeitsev, 48, kv. 142, both of Chelyabinsk; Alexei D. Postnikov, ulitsa Udarnikov, 10, kv. 56, Podolsk, Moskovskaya oblast; Vladimir I. Dombrovsky, ulitsa Kaslinskaya, 19a, kv. 32, Chelyabinsk, and Vladimir K. Evstafiev, ulitsa Pravdy, 7/8, kv. 3, Podolsk, Moskovskaya oblast, all of U.S.S.R.

Filed Sep. 30, 1982, Ser. No. 432,368

Int. Cl.³ F22B *33/00*

U.S. Cl. 122—1 A **5 Claims**



1. A device for heating air by flue gases in steam boilers and furnaces, comprising:

a supply flue;

heat-exchange tubes;

tube plates in which are mounted said heat-exchange tubes;

at least one section composed of said heat-exchange tubes and tube plates and installed in said supply flue;

a device for protection of said tubes against abrasive wear incorporating at least one screen disposed in said flue upstream of said section;

corrugated sheets facing each other and mating along the lines of contacts of convex portions thereof, whereby a plurality of cells are formed to make up said screen;

wherein the height of each cell in said screen is two to five times the maximum size of the cross section thereof;

and said cells having respective axes extending substantially parallel to longitudinal axes of said tubes.

4,452,182

SODIUM-WATER TYPE STEAM GENERATORS

André Baudoin, Marly le Roi, France, assignor to Creusot-Loire and Commissariat a l'Energie Atomique, both of Paris, France

Filed Jun. 24, 1982, Ser. No. 391,742

Claims priority, application France, Jul. 17, 1981, 81 13941

Int. Cl.³ F22B *1/02*

U.S. Cl. 122—32 **2 Claims**

1. Steam generator of the sodium-water type, particularly for nuclear power stations, comprising

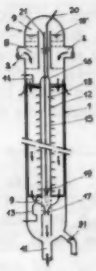
(a) a primary circuit constituted by an elongated vessel (1) filled with liquid sodium;

(b) an input zone (8) of said elongated vessel into which said liquid sodium is introduced;

(c) an outlet zone (9) of said elongated vessel (1) in which said liquid sodium is removed;

(d) a reservoir (15) immersed in the liquid sodium contained in said elongated vessel, partly filled with an inert gas (18) defining a free level of said liquid sodium; and

(e) a secondary circuit constituted by a plurality of water circulating tubes extending at the interior of said elongated vessel,



(f) a lower portion of said reservoir (15) communicating directly with said elongated vessel (1) in order to form a free passage in both directions of said liquid sodium, limiting in the entire steam generator the propagation of a pressure wave resulting from a sudden accidental chemical reaction between said sodium and water.

4,452,183

METHOD AND DEVICE FOR UNCLOGGING THE TOP SURFACE OF THE TUBE PLATE OF A STEAM GENERATOR

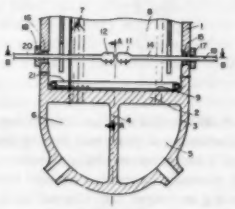
Jean-Claude Yazidjian, Bougival, France, assignor to Framatome & CIE., Tour Fiat, France

Filed May 12, 1982, Ser. No. 377,482

Claims priority, application France, May 22, 1981, 81 10204

Int. Cl.³ F22B *37/52*

U.S. Cl. 122—392 **4 Claims**



2. Unclogging device for the upper surface of the tube plate of a steam generator comprising, in a cylindrical vessel with a vertical axis, a vertical bundle of bent tubes of inverted U-shape, each of said tubes being connected at each of its lower ends to the flat horizontal tube plate fast to the vessel of the steam generator, a fluid at high temperature being led to the tubes of the bundle beneath the tube plate to provide heat enabling vaporization of the feed water introduced into the steam generator in contact with the tubes, said device comprising

(a) two projection heads connected to means for supplying water under pressure, said heads being located above said tube plate and having nozzles directed toward said tube plate;

(b) means for displacing said projection heads simultaneously in a direction diametral to said steam generator

passing between the branches of said U-shaped tubes, in such manner that the position of said two projection heads always remains symmetrical with respect to the vertical axis of said steam generator, so as to sweep symmetrically the whole of said tube plate;

(c) means for causing oscillating movement of said two projection heads about said diametral displacement direction, so as to sweep the upper surface of said tube plate; and

(d) means for evacuating sludge comprising at least one pipe located at a slight distance above said tube plate at its periphery adjacent said vertical cylindrical vessel, said pipe having downwardly directed orifices and being branched to a conduit leading to the exterior of said steam generator and connected to a suction device for evacuation of said sludge.

4,452,184

BOILER DRAFT CONTROL DEVICE

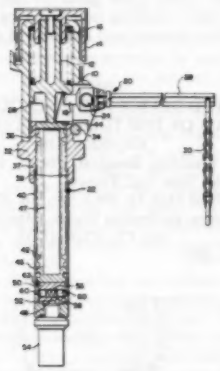
Rudolf Vollmer, Mosbach, Fed. Rep. of Germany, assignor to Honeywell-Braukmann GmbH, Mosbach, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,712

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143853; Feb. 6, 1982, 3204179

Int. Cl.³ F22B *37/46*

U.S. Cl. 122—504.1 **14 Claims**



1. A boiler draft control device comprising:

a housing containing a push rod, spring biased downward away from a temperature setting knob,

lever means pivotally supported on said housing, said lever means having an output arm adapted to be connected to a boiler draft apparatus and a second arm abutting against a face of said push rod,

an immersion shell adapted to be inserted into the boiler to be in contact with the boiler water,

means connecting said immersion shell to said housing,

control thermostat means having a control range and contained inside said shell between said push rod and a lower end of said immersion shell wherein said control thermostat means comprises means for increasing in length upon a change in temperature causing said push rod to move upward to operate said lever means,

safety thermostat means having a sensitive range outside of the control range of said control thermostat means, and

means connecting said safety thermostat means to said lower end of said immersion shell to override the effect of said control thermostat means by pushing upward to raise said lower end when an excessive high temperature exists in the boiler.

4,452,185

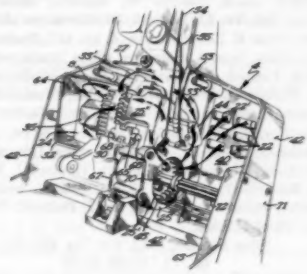
ENGINE HOUSING

Glenn L. Larsen, Bloomington, and Jerold F. Patrin, Apple Valley, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Feb. 9, 1983, Ser. No. 465,138

Int. Cl.³ F01P *1/02*

U.S. Cl. 123—41.58 **8 Claims**



1. An engine housing for use with an internal combustion engine having a carburetor, flywheel fan, a combustion chamber and cooling fins therefor, an intake side for supplying fuel and air to the combustion chamber, and an exhaust side adjacent the cooling fins of the combustion chamber which receives heat radiated from the engine and the exhaust gases from the combustion chamber, which comprises:

(a) a housing assembly having a hollow compartment in which an engine is mounted and which substantially encloses the engine to prevent any contact between the engine and an operator;

(b) means for dividing the engine compartment into substantially separate left and right chambers with the left chamber being adjacent the intake side of the engine and the right chamber being adjacent the exhaust side of the engine such that a first air flow path from the left chamber to the right chamber is through the engine structure itself wherein the air is heated by engine heat, and whereby said dividing means greatly restricts recirculation of heated air from the exhaust side to the intake side; and

(c) a second air flow path from the right chamber to the left chamber, whereby a small flow of heated air from said exhaust side of the engine is recirculated through said intake side and directed past the carburetor.

4,452,186

VALVE CONTROL FOR INTERNAL COMBUSTION ENGINES

Rainer List, Renningen; Klaus Schellmann, Hemmingen, and Heinz Schulze, Stuttgart, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,828

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004396

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **29 Claims**

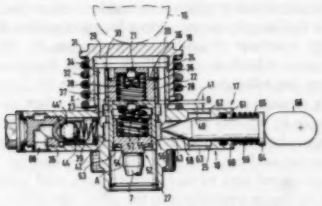
1. A valve control for an internal combustion engine, comprising

a hydraulic arrangement between a camshaft and a cylinder head valve of the engine for controlling stroke length and opening time of the valve,

said hydraulic arrangement including a multiple piston system having first piston means for cooperating with the camshaft, second piston means for cooperating with at least one of said first piston means and a third piston means, and third piston means for cooperating with said valve, housing means within which at least the third pis-

ton means of said piston system is disposed, and damping means for controlling seating of the valve,

adjustable means associated with said piston system including throttle means for influencing the piston system wherein said throttle means is adjustably controlled by at least one operating parameter of the internal combustion



engine, and wherein the stroke length and opening time of the valve may be varied by the piston system of said hydraulic arrangement being influenced by adjustment of said throttle means in response to changes in said at least one operating parameter of said internal combustion engine.

4,452,187

HYDRAULIC VALVE LIFT DEVICE

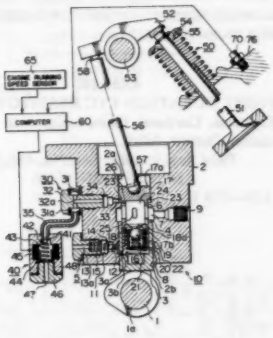
Toru Kosuda; Yasuhiro Takeuchi, both of Okazaki; Noboru Matsubara, Susono, and Masaaki Takizawa, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Division of Ser. No. 178,285, Aug. 15, 1980, Pat. No. 4,408,580. This application Mar. 10, 1983, Ser. No. 474,055

Claims priority, application Japan, Aug. 24, 1979, 54-108471; Aug. 28, 1979, 54-109510

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **4 Claims**



1. In a hydraulic valve lift device including a lifter having therein an oil pressure chamber for introduction of oil and slidably disposed in a cylindrical bore of a housing with its one end engaged by a cam on a cam shaft and a plunger slidably disposed in said lifter for opening and closing an intake or exhaust valve, of which a valve lift is made variable depending on the rotational speed of said cam due to discharge of oil from said oil pressure chamber through a throttling port, the improvement comprising a braking chamber defined by a flange portion of said plunger and said cylindrical bore, a slit adapted to communicate said braking chamber with an oil feed chamber of said plunger for flow-in of oil and to be reduced in its opening area depending upon the downward movement of said plunger, a relief valve provided in association with said braking chamber for controlling an oil pressure therein so as to cause it to be below a set value, a sensor for producing an electric signal representing a braking force generated by said braking chamber, an electromagnetic means for regulating a set working pressure of said relief valve, and a computer for energizing said electromagnetic means depending upon the output signal of said sensor to control said relief valve such that its set working pressure corresponds with a desired value, and wherein said computer comprises an amplifying circuit for amplifying a signal from said sensor, a condition setting circuit for setting a valve seating impact load depending upon running speeds of the engine, a comparator circuit for comparing the output of said amplifying circuit with the set value of said condition setting circuit and an output amplifying circuit for amplifying the output of said comparator circuit and outputting the resulting value to said electromagnetic means.

4,452,188

APPARATUS FOR CONTROLLING FEED OF OIL DISCHARGED FROM OIL PUMP

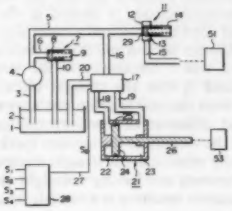
Tooru Kosuda; Hiromi Katou, both of Okazaki; Masaaki Takizawa, Mishima; Masaru Tamura, Susono; Noboru Matsubara, Susono, and Tsutomu Hiyoshi, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 16, 1982, Ser. No. 368,969

Claims priority, application Japan, Apr. 17, 1981, 56-57019

Int. Cl.³ F01L *1/34, 13/00*

U.S. Cl. 123—90.18 **10 Claims**



1. An apparatus for controlling the feed of oil discharged from an oil pump in an internal combustion engine having an oil pump with a relief valve which feeds lubricating oil to the engine by way of an oil delivery pipe and which feeds working oil to a hydraulic actuator for controlling valve timings of the engine by way of a branch pipe connected to the oil delivery pipe, comprising a valve means in said oil delivery pipe, which opens in accordance with the delivery pressure of the discharged oil to control the amount of the lubricating oil flowing therethrough, said branch pipe being connected to the oil delivery pipe between said oil pump and said valve means.

4,452,189

SEPARATELY IGNITED INTERNAL COMBUSTION ENGINE WITH AT LEAST ONE MAIN COMBUSTION CHAMBER AND AN IGNITION CHAMBER ASSIGNED TO IT

Reinhard Latsch, and Helmut Maurer, both of Vaihingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,621

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3025926

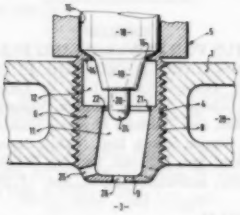
Int. Cl.³ F02P *13/00*

U.S. Cl. 123—143 B **23 Claims**

1. An internal combustion engine operating with externally supplied ignition having at least one main combustion chamber, which adjoins a first wall, and having at least one ignition chamber, which has two ignition chamber sections communicating at a transitional zone, of which a rear ignition chamber

section has a first diameter and a forward ignition chamber section has a second diameter, which is smaller than the first diameter, and the forward ignition chamber section adjoins a front wall, in which a number of overflow conduits are located, which connect the ignition chamber with the main combustion chamber and of which at least one overflow conduit is oriented at a tangent to the second diameter of the forward ignition chamber section and another overflow conduit is oriented substantially parallel to the longitudinal axis of the rear ignition chamber section, and having an ignition device including;

an electrode embodied in a straight form, which is carried by an insulator protruding with a conical foot into the rear ignition chamber section, wherein said electrode extends into the forward ignition chamber section; and



a counterelectrode oriented toward the straight electrode, which counterelectrode is formed in the vicinity of the transitional zone by a circumferential wall of the forward ignition chamber section and from which an ignition spark begins and which terminates at the straight electrode, characterized in that the straight electrode is oriented coaxially with the rear ignition chamber section and that the second diameter of the forward ignition chamber section, in the vicinity of the ignition spark gap, is oriented eccentrically relative to the straight electrode, the shortest distance between and having a straight electrode and the second diameter resulting in a suitable length for the spark gap.

4,452,190

COLD START FUEL/AIR MIXTURE SUPPLY DEVICE FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

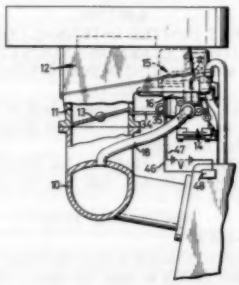
Gray E. D. Ross, East Burne Farm, Bickington, Newton Abbot, S. Devon, England

Filed Mar. 29, 1982, Ser. No. 362,858

Claims priority, application United Kingdom, Mar. 27, 1981, 8109691

Int. Cl.³ F02M *1/08*

U.S. Cl. 123—179 G **9 Claims**



1. A cold start fuel/air mixture supply device for supplying a fuel/air mixture to an inlet manifold of an internal combustion engine in combination with a fuel pump which is an accelerator pump, said device comprising a body; an air supply passage formed in the body; one end of the air supply passage being for connection to the inlet manifold of the engine so that air can be drawn through that passage by the action of engine suction when the device is fitted to the engine; throttling means for throttling fluid flow through the air supply passage; a fuel control valve which is operable to allow fuel to be drawn from a fuel supply system into a location within the air supply passage upstream of said throttling means by the action of a depression which is established at said location, means for varying the effective cross-sectional area of a part of said air supply passage upstream of said location when the device is in use so as to control the depression that is established at said location when the device is in use, and yieldable biasing means for biasing said area varying means to minimize the effective cross-sectional area of said passage part, said yieldable biasing means acting in opposition to the effect upon said area varying means of the depression that is established at said location and that tends to increase the effective area of said passage part, in which the yieldable biasing means comprise primary yieldable biasing means and the device includes supplementary yieldable biasing means operable to augment the biasing load exerted upon said area varying means by said primary yieldable biasing means in opposition to the effect upon said area varying means of the depression that is established at said location, and counteracting means operable to render said supplementary yieldable biasing means inoperative, wherein further means are provided which are adapted, when the combination is in use, to render the counteracting means inoperable for a predetermined time interval after the engine begins to run under its own power so that the thrust exerted on said area varying means by said primary yieldable biasing means is augmented by a thrust exerted by said supplementary yieldable biasing means for said predetermined period, said counteracting means being operable once said predetermined time interval has elapsed and said engine continues to run under its own power so that only said primary yieldable biasing means exert a load on said area varying means which opposes the effect thereon of the depressing that is established at said location when said counteracting means are operated to render said supplementary yieldable biasing means inoperative.

4,452,191

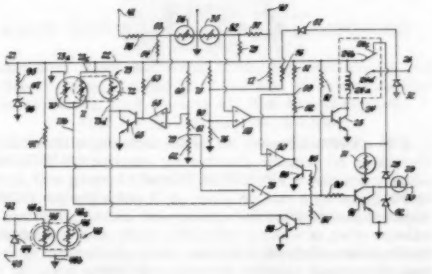
SHORT DURATION PTC RESISTOR TIMER

Robert E. Steele, Cortland, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1982, Ser. No. 416,211

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 H **2 Claims**



1. An accurate short duration timer comprising, in combination:

an electric power source;

first and third self-heating PTC resistors having substantially identical exponentially increasing resistance-temperature characteristics within a first temperature range, said resis-

tors being at least partially thermally isolated from each other and energized electrically in series from said electrical power source to stabilize at a first stabilization temperature within said first temperature range;

a second self-heating PTC resistor having a substantial surface in thermal contact with the first resistor, the second resistor having a low resistance at the first stabilization temperature and a steeply increasing resistance-temperature characteristic in a second temperature range higher than the first stabilization temperature;

first means actuable to energize the second resistor from said electric power source so as to substantially immediately heat it from the first stabilization temperature to a second stabilization temperature within said second temperature range, whereupon heat flows from the second resistor to the first resistor across said surface and the resistance of the first resistor changes its value on a percentage basis in comparison to its resistance prior to said energization and therefore in in comparison to the resistance of the third resistor, from the moment of actuation of the first means at a time rate substantially independent of changes in ambient temperature and voltage of the electric power source; and

second means effective to detect and signal a predetermined percentage change in the resistance of the first resistor in comparison with that of the third resistor, whereby a predetermined time elapses between the actuation of the first means and the signal from the second means.

4,452,192

CYLINDER BLOCK OF ENGINE

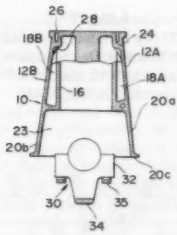
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 7, 1981, Ser. No. 309,386

Claims priority, application Japan, Oct. 7, 1980, 55-142991[U]; Oct. 7, 1980, 55-142989[U]

Int. Cl.³ F02F 7/00

U.S. Cl. 123—195 R **9 Claims**



1. A cylinder block, comprising:

an upper section having first and second oppositely disposed wall members;

cylinder barrels located in said upper section and integral with said upper section, each cylinder barrel having a cylinder bore; and

a skirt section having a cavity defining a crankcase for an engine crankshaft, said skirt section having first and second oppositely disposed external walls which are integral to and in straight alignment along a common plane with said first and second wall members of said upper section, respectively, and parallel to an axis of said crankshaft.

4,452,193

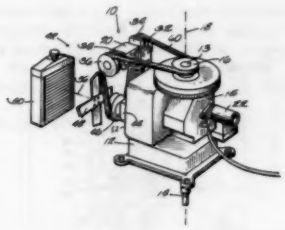
ENGINE WITH BELT MEANS CONNECTING A FLYWHEEL PULLEY A GOVERNOR DRIVE PULLEY, AND A COOLING LIQUID PUMP DRIVE PULLEY

Richard L. Morris, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 19, 1982, Ser. No. 359,757

Int. Cl.³ F02B 67/06

U.S. Cl. 123—195 R **9 Claims**



1. An internal combustion engine including opposed first and second sides and a third side adjacent said first and second sides, carburetion means for determining a speed of said engine and on said first side, a crankshaft having an axis normal to the third side, a flywheel pulley on said third side and connected to said crankshaft, a cooling liquid pump drive pulley on said second side, governor means operably connected to said carburetor means for governing the speed of said engine, said governor means including a governor drive pulley located between said flywheel pulley and said cooling liquid pump drive pulley, and belt means driveably connecting said flywheel pulley, said governor drive pulley, and said pump drive pulley.

4,452,194

OUTBOARD MOTOR

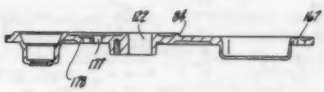
Eifu Watanabe, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata and Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, both of, Japan

Filed Sep. 2, 1982, Ser. No. 414,035

Claims priority, application Japan, Sep. 10, 1981, 56-142663; Sep. 10, 1981, 56-142665; Sep. 10, 1981, 56-142666

Int. Cl.³ F02F 7/00

U.S. Cl. 123—195 P **8 Claims**



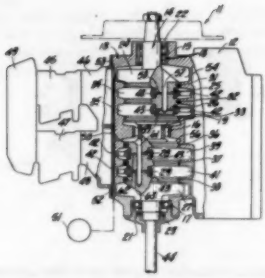
1. An outboard motor comprising a power head including an internal combustion engine, a driveshaft housing positioned beneath said power head, a supporting plate interposed between and separating said power head and said driveshaft housing, said internal combustion engine being supported upon the upper side of said supporting plate, and an oil pan for containing lubricant for said engine supported upon the lower side of said supporting plate.

4,452,195

LUBRICATING SYSTEM FOR OUTBOARD MOTORS

Kuniyoshi Matsumoto, and Katsuya Ishimatsu, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha and Sanshin Kogyo Kabushiki Kaisha, both of, Japan

Filed Apr. 8, 1983, Ser. No. 483,226
Claims priority, application Japan, May 26, 1982, 57-88067
Int. Cl.³ F02F 7/00; F02B 75/18
U.S. Cl. 123—195 AC 9 Claims



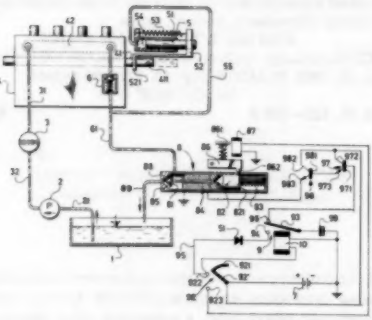
1. In a lubricating system for an internal combustion engine having a crankshaft supported for rotation about a generally vertically extending axis, a crankcase defining a crank chamber in which a first portion of said crankshaft rotates, and a connecting rod journal formed on said crankshaft first portion for journaling the big end of a connecting rod, the improvement comprising means defining a lubricant chamber sealed from and positioned above said crank chamber, said crankshaft having a second portion thereof extending into said lubricant chamber, a lubricant passage formed in said crankshaft and having an inlet opening in said second portion communicating with said lubricant chamber and a discharge opening formed in said connecting rod journal of said first portion for lubricating said connecting rod big end and means for delivering lubricant to said lubricant chamber.

4,452,196

DEVICE FOR STOPPING A FUEL INJECTION ENGINE

Jaromir Indra, Brno, Czechoslovakia, assignor to Vysoke uceni technicke v Brne, Brno, Czechoslovakia

Filed Oct. 22, 1981, Ser. No. 314,017
Int. Cl.³ F02D 17/00
U.S. Cl. 123—198 DB 3 Claims



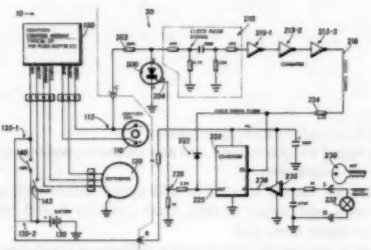
1. In a combination including a fuel injection engine, the fuel supply for the engine being provided by an injection pump having a control bar, said injection pump being filled by a delivery pump, excess fuel being returned through a pressure-reducing valve and thence to a fuel supply sump, an electromagnetic valve being interposed in the piping which returns the superfluous fluid to the fuel tank, there being a hydraulic member the working space of which is connected by means of piping to the conduit returning the superfluous fluid between the pressure reducing valve and the electromagnetic valve, the electromagnetic valve being constantly urged by a pre-stressed spring into an open position, the said hydraulic member, by means of hydraulic pressure being adapted to place the control bar of the fuel injection pump into a position in which the injection pump does not supply the engine with any fuel, the hydraulic member being selectively controlled as by a hand operated change-over switch, a switching relay, an exciting transistor, and a power transistor, the improvement comprising: a battery, and a device for stopping the engine wherein an arm of the change-over switch is connected to the positive pole of the battery, the said arm having at least two other possible positions besides its open position, when in the first other position the arm engaging a contact connected both to a winding of a switching relay, the other end of such relay being connected to ground, and by means of a conductor to a first contact of the switching relay which is engaged by the arm of the switching relay when the current passed through its winding, and through the arm of the switching relay to one pole of a condenser, the other pole of the condenser being connected to ground, the collector of an exciting transistor and the collector of the power transistor being connected in parallel to the positive pole of the battery, the other fixed contact of the switching relay being connected to the base of the power transistor, one end of the winding of the electromagnetic valve being connected to the emitter of the power transistor, the other end of such winding being connected to ground, when the arm of the change-over switch is in the second of the other possible positions, it engages, by means of a segment, both the contact connected to the winding of the switching relay and the contact through which the positive pole of the battery by means of a conductor which connects it to the electric starter of the engine, said last contact being connected to the winding of a pawl mechanism arranged on the electromagnetic valve, the other end of such winding being grounded, when the said electromagnetic valve is energized, the pawl being pulled toward its core by the pressure of a spring, when the winding of the electromagnet of the pawl mechanism is de-energized, and if the electromagnetic valve is in its seat, a tooth of the revolving pawl, affected by the function of the spring, engages a face of the movable core of the electromagnetic valve, which causes it to be held in the valve seat.

4,452,197

VEHICLE ANTI-THEFT IGNITION FOILING DEVICE

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Aug. 11, 1982, Ser. No. 394,645
Int. Cl.³ B60R 25/04
U.S. Cl. 123—198 B 14 Claims



1. Ignition foiling means, adapted to a motor vehicle engine means, comprising therefor:

a. an ignition coil means having a high tension secondary, and a primary with at least a first terminal coupled in series with an interrupter means and a source of d.c.

power that is effectively returned to a second terminal thereof;

b. said interrupter means coupled with said engine means and effective to produce a plurality of ignition control pulse signals synchronized therewith;

c. defeating means coupled with said interrupter means to effect controllable inhibition of said pulse signals;

d. irregular signal means coupled with said defeating means and effective therewith to control an effectively alternate period of said pulse signal inhibition subsequent to the elapse of at least one effectively inconstant period of pulse signal enablement; and,

e. operator over-ride means coupled with said defeating means and effective to selectively enable and disable the controllable inhibition effect of said defeating means.

11. Ignition foiling method adapted for thwarting the unauthorized operation of a motor vehicle through producing the illusion of improper engine operation, having the steps of:

a. providing spark ignition pulses for said engine; and,

b. producing an irregular signal effective to inhibit said spark ignition pulses for an effectively alternate period subsequent to the elapse of at least one substantially inconstant period of enablement of said spark ignition pulses.

4,452,198

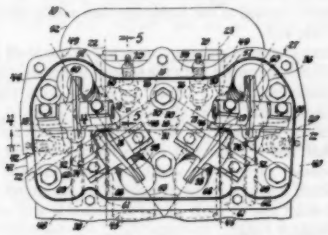
COMPACT DUAL SPARK INTERNAL COMBUSTION ENGINE

Craig A. Berland, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1982, Ser. No. 392,791

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—310 **4 Claims**



1. A dual ignition push rod actuated overhead valve internal combustion engine comprising

a cylinder bank defining two in-line cylinders having parallel coplanar axes and closed at their adjacent ends by a cylinder head to define a pair of combustion chambers at the cylinder closed ends, said head including opposite side walls and end walls peripherally enclosing the chambers,

means defining intake and exhaust ports opening to each combustion chamber at locations lying in a diagonal plane through the axis of their respective cylinder and forming a substantial angle with the longitudinal and lateral planes through the respective cylinder axis, said ports communicating each chamber through the side walls with opposite sides of the cylinder head and being controlled by valves actuatable by cylinder head mounted rocker arms driven by push rods operatively engaging a camshaft carried alongside the cylinders, and

dual spark plugs for each cylinder carried in the cylinder head, said spark plugs having spark gaps located in generally opposite positions in each combustion chamber angularly intermediate the locations of its respective intake and exhaust ports and lying close to a diagonal plane through said cylinder axis and normal to the plane of said port openings

said push rods for each cylinder extending through said cylinder head adjacent to one of the cylinder ports and between one of the spark plugs and the adjacent side wall, the other of the spark plugs for each cylinder being mounted in an opening through the opposite side wall and said one of the spark plugs for each cylinder being mounted in an opening through the adjacent end wall, whereby a compact and convenient dual ignition fast burn combustion chamber and valve gear arrangement is provided.

4,452,199

NON-CONTACT IGNITION SYSTEM

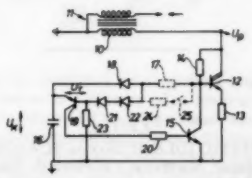
Bo C. Andreasson, Gothenburg, Sweden, assignor to EMAB Electrolux Motor Aktiebolag, Huskvarna, Sweden

Filed Oct. 11, 1983, Ser. No. 540,345

Claims priority, application Sweden, Oct. 13, 1982, 8205820

Int. Cl.³ F02P *5/04, 1/00*

U.S. Cl. 123—335 **8 Claims**



1. Non-contact, overspeed preventing ignition system for an i.c. engine including an ignition coil (**11**) with primary and secondary windings and a movable magnet generating a primary voltage in the form of pulses, in which the primary winding (**10**) is in series with an ignition switch (**12**) with a control circuit which, during an ascending part of the curve of such a voltage pulse, keeps the switch conducting simultaneously as a capacitor (**16**) in an RC-circuit is charged, which RC-circuit is connected to the control electrode of the switch and which capacitor is connected in parallel to a transistor circuit so that the voltage difference ($U_K - U_B$) between the voltage (U_K) of the capacitor and the control voltage (U_B) of the transistor circuit, after said ascending part of the curve exceeds a critical ignition voltage (U_T) in this circuit and the capacitor is discharged whereby the control voltage in the control circuit ceases and the ignition swtich (**12**) breaks the pulse in the primary winding, characterized in that the said RC-circuit has a time constant for reaching the said critical ignition voltage ($U_K - U_B = U_T$) at an r.p.m. of the engine higher than 10000 r.p.m. on a descending part of the curve of the voltage pulse which on the breaking of the primary circuit induces a secondary voltage in the ignition coil which is insufficient for ignition.

4,452,200

CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Kazumichi Tsutsumi, Hyogo, and Masahiko Matsuura, Hiroshima, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Toyo Kogyo Co., Ltd., Hiroshima, both of, Japan

Filed Sep. 24, 1982, Ser. No. 422,914

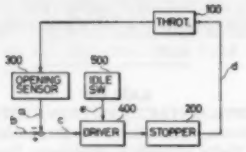
Claims priority, application Japan, Sep. 25, 1981, 56-152784; Sep. 25, 1981, 56-152785

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—339 **8 Claims**

1. A throttle opening control device for an internal combustion engine, comprising: throttle stopper means for controlling a control valve of an internal combustion engine during idle running, sensor means for detecting the opening of said valve, drive means for controlling the opening of said valve through said throttle stopper according to a deviation between an

actual opening detected by said sensor means and a predetermined desired opening, and judgment means for suspending



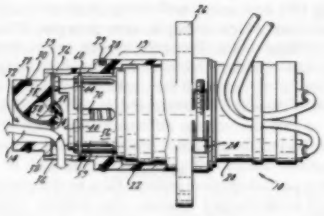
operation of said driver in a non-idling state of said engine, according to an output of said sensor indicative of actual opening of said control valve and to said deviation.

4,452,201

AUTOMATIC IDLE SPEED ACTUATOR VALVE

Richard J. Mazur, Northville; Lawrence W. Tomczak, Rochester; Salim A. Momin, Troy, and Howard R. Killen, Rochester, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 25, 1983, Ser. No. 497,965
Int. Cl.³ F02D *11/10*
U.S. Cl. 123—339 **10 Claims**



1. In a throttle body for supplying air and/or fuel to an engine and having a valve first passage for the air or air/fuel mixture, and a second passage for supplying air during idle when the first passage is substantially closed, a selectively rotatable actuator means to control the flow of air through the second passage comprising:

a housing having a generally cylindrical bore open at one end to communicate with an air flow;

multiple orifices around the circumference of said housing to further communicate with said air flow;

housing stops mounted on the interior circumference of said generally cylindrical bore;

flow directing means partially across said bore defining a shear edge, having a pivot pin and defining an orifice in said generally cylindrical bore;

a rotatable valve element supported by said bore;

a disc on said valve element;

valve stops located on the outside circumference of said disc to communicate with said housing stops when said valve element and disc is selectively rotated to its end of travel;

and drive means to selectively rotate said valve element and disc within said cylindrical bore in said housing to allow the metering of an air-flow through said actuator; and

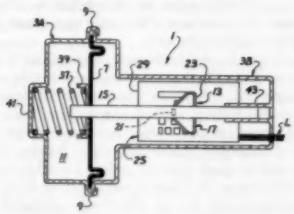
clutch means to communicate between said drive means and said valve element.

4,452,202

VACUUM PRESSURE TRANSDUCER

Paul M. Meyer, East Alton, Ill., assignor to ACF Industries, Inc., New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,452
Int. Cl.³ F02D *5/00*; G01L *7/08*
U.S. Cl. 123—494 **8 Claims**



1. A vacuum pressure transducer for sensing vacuum pressure levels and for developing an electrical signal indicative of the vacuum pressure sensed, comprising:

a housing having an inlet connected to a vacuum source;

a flexible diaphragm extending across the housing for one side of the diaphragm to be exposed to vacuum pressure;

electrical switch means including a plurality of electrically conductive segments arranged in a predetermined pattern on an electrically non-conductive board;

a shaft attached to the diaphragm and axially movable therewith; and

electrical contact means connected to the shaft for making electrical contact with the segments, the electrical contact means including a wiper depending from the shaft and made of an electrically conductive material, the wiper having an upper tab end received in a slot formed in the shaft and a lower end which forms a continuous curved contact surface the width of which extends across the board on which the segments are arranged thereby to contact one or more of the segments at any one time and produce a digital electrical signal representing the vacuum pressure at that time.

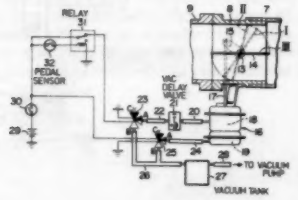
5. In a feedback system for controlling the air-fuel ratio of a mixture supplied to a internal combustion engine, the system including an electronics control unit for receiving and processing electrical signals from a transducer, the improvement comprising a vacuum pressure transducer for sensing the engine's intake manifold vacuum pressure and for supplying a digital electrical signal representive thereof to the electronic control unit, the transducer including a housing having an inlet connected to the engine's intake manifold; a flexible diaphragm extending across the housing for one side of the diaphragm to be exposed to manifold vacuum; electrical switch means including a plurality of electrically conductive segments arranged in a predetermined pattern on a board of electrically non-conductive material; a shaft attached to the diaphragm and axially movable therewith; and, electrical contact means connected to the shaft, the electrical contact means including a wiper depending from the shaft and made of an electrically conductive material, the wiper having an upper tab end received in a slot formed in the shaft and a lower end which forms a continuous curved contact surface the width of which extends across the board on which the segments are arranged, the segments being arranged in a pattern in accordance with a predetermined binary code whereby the combination of segments contacted by the wiper at any one time produces a digital electrical signal representing manifold vacuum pressure at that time.

4,452,203

THREE POSITION DIESEL ENGINE INTAKE AIR THROTTLING SYSTEM

Sumio Oshika; Takahiko Kinoshita, both of Aichi; Nobuhiko Kakeno; Nobuhiro Miura, both of Toyota; Kiyoshi Kato, Anjo; Satosi Kuwakado, Aichi, and Yasuo Kondo, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Nippon Soken, Inc., Nishio, both of, Japan

Filed Feb. 16, 1982, Ser. No. 348,770
Claims priority, application Japan, Aug. 26, 1981, 56-134580
Int. Cl.³ F02D 31/00
U.S. Cl. 123—403 4 Claims



1. An intake air throttling system for a diesel internal combustion engine comprising an electrical switch which is opened when said engine is not to be operated and which is closed when said engine is to be operated, an accelerator pedal which controls the load on said engine, and an air intake passage, comprising:

a throttling valve mounted in said air intake passage so as to be movable from a first position in which it substantially fully closes said air intake passage, through a second position in which it partly throttles said air intake passage, up to a third position in which it substantially fully opens said intake passage; and

a control system for controlling said throttling valve so as to position said throttling valve to said first position when said engine is put out of operation from being in operation, to said second position when said engine is being operated in idling operational condition, and to said third position when said engine is being operated in non-idling load bearing operational condition, said control system comprising a double action diaphragm actuator which comprises a first and a second diaphragm chamber, a first electromagnetic pressure switching system which is controlled by said accelerator pedal so as to furnish a first electrical signal indicative of whether said engine is operating in the non-load bearing idling operational condition or in the load bearing non-idling operational condition;

said control system receiving said first electrical signal and also receiving supply of switched electrical power from said electrical switch as a second electrical signal;

said double action diaphragm actuator positioning said throttling valve to said first, second, or third position according to different combinations of supply of atmospheric pressure or vacuum to said first and second diaphragm chambers;

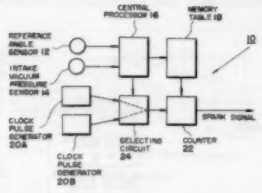
selective supply of atmospheric pressure or vacuum to said first diaphragm chamber being controlled by said first electromagnetic pressure switching valve which is controlled according to said first electrical signal, and selective supply of atmospheric pressure or vacuum to said second diaphragm chamber being controlled by said second electromagnetic pressure switching valve which is controlled according to said second electrical signal.

4,452,204

SPARK TIMING CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Yuji Matsubara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 141,980, Apr. 21, 1980, abandoned.
This application Oct. 4, 1982, Ser. No. 432,676
Claims priority, application Japan, Apr. 21, 1979, 54-49469
Int. Cl.³ F02P 5/00
U.S. Cl. 123—417 5 Claims



1. Apparatus for controlling the occurrence time of ignition sparking for a piston in a cylinder of an internal combustion engine comprising means for deriving a signal when the piston has a predetermined stroke position, means for deriving signals indicative of engine loading and speed, means responsive to the load and speed indicating signals for deriving a signal indicative of a desired count between the occurrence time of the predetermined stroke position and the desired time of ignition sparking, the last named means including: a two dimensional table having $x_1 \ldots x_N$ and $y_1 \ldots y_M$ inputs for addressing $x_N \cdot y_M$ entries, each entry representing a desired count value between the time of the predetermined stroke position and the desired spark time, the x and y inputs being respectively responsive to magnitudes represented by the engine loading and speed signals, all of the entries at positions $x_1 \ldots x_k$ for engine speeds greater than a predetermined speed value having a first relationship with respect to the desired count value and an angular difference between the predetermined stroke position and the desired sparking time, all of the entries at positions $x_{k+1} \ldots x_N$ for engine speeds greater than the predetermined speed value having a second relationship with respect to the desired count value and an angular difference between the predetermined stroke position and the desired sparking time, the first and second relationships having a predetermined ratio Q so that like angular differences at positions x_k and x_{k+1} for the values of y_h have the ratio Q, where y_h is selectively $y_1 \ldots y_M$; and means for comparing the desired count with the number of periods of a selected first or second fixed frequency waveform occurring during an interval between the predetermined stroke position and sparking, the first and second fixed frequency waveforms having periods differing by said predetermined ratio Q, the first fixed frequency waveform being compared in response to all engine speeds no greater than the predetermined value, the second fixed frequency waveform being compared in response to all engine speeds greater than the predetermined value.

4,452,205

METHOD AND APPARATUS FOR CONTROLLING IGNITION TIMING IN AN INTERNAL COMBUSTION ENGINE

Yasuhito Takasu, Toyohashi; Katsuharu Hosoe, Kariya, and Toshiharu Iwata, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 1, 1983, Ser. No. 481,235
Claims priority, application Japan, Apr. 2, 1982, 57-55700
Int. Cl.³ F02B 5/04
U.S. Cl. 123—419 7 Claims

1. A method of controlling ignition timing in an internal combustion engine, comprising the steps of:

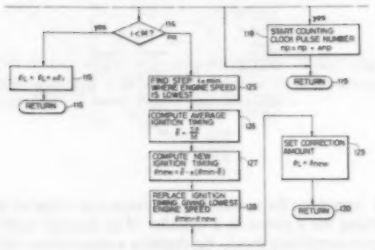
(a) operating said engine with a plurality of different ignition

timings to find engine output obtained with each of said ignition timings in such a manner that said engine is operated for a predetermined period of time with each of said ignition timings one after another;

(b) determining one of the plurality of ignition timings, which gives the lowest engine output;

(c) computing an average value of the plurality of ignition timings;

(d) computing a new ignition timing such that the new ignition timing is opposite to the ignition timing giving the



lowest engine output with respect to the average value, and that the difference between said average value and said new ignition timing equals a multiple of the difference between the ignition timing giving the lowest engine output and the average value;

(e) substituing said ignition timing giving the lowest engine output with said new ignition timing so that said steps (a) to (d) are exeucted; and

(f) repeating said steps (a) to (e) to find an optimum ignition timing.

4,452,206

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

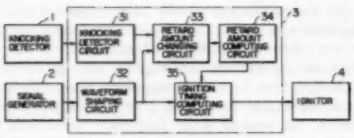
Hiroshi Haraguchi, Oobu; Ko Narita, and Toshiharu Iwata, both of Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1982, Ser. No. 428,615

Claims priority, application Japan, Oct. 7, 1981, 56-160663

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **11 Claims**



1. An ignition timing control system for internal combustion engines, comprising:

an engine sensor for detecting conditions of the engine,

a knocking detector circuit for detecting knockings of an internal combustion engine, and producing an ignition timing retard amount per knocking,

a control unit for generating an ignition timing control signal in response to output signals of the engine sensor and said knocking detector, and

an ignitor for generating an ignition signal in response to the ignition timing control signal from said control unit, said control unit comprising:

means for changing the retard amount per knocking depending on whether another knocking is decided before the lapse of a predetermined interval from the decision of a knocking, and

means for changing said predetermined interval in accordance with the engine conditions detected by said engine sensor.

4,452,207

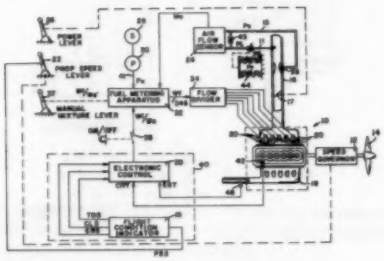
FUEL/AIR RATIO CONTROL APPARATUS FOR A RECIPROCATING AIRCRAFT ENGINE

Robert G. Moore, Jr., South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 19, 1982, Ser. No. 399,516

Int. Cl.³ F02B *3/00;* **F02M** *39/00*

U.S. Cl. 123—440 **7 Claims**



1. Fuel/air ratio control apparatus for a reciprocating aircraft engine having a cylinder head and generating exhaust gas during engine operation, said apparatus comprising a fuel metering device for regulating fuel flow to the engine as a function of the air flow through the engine and a fuel ratio control signal which varies as a function of a desired fuel/air ratio, and means for generating said fuel ratio control signal, said fuel ratio control signal generating means including exhaust gas temperature sensing means for generating an exhaust gas temperature signal which varies as a function of the temperature of the exhaust gas, first signal generating means for generating a first temperature signal representing an exhaust gas temperature at which optimum power is produced by the engine, second signal generating means for generating a second temperature signal representing an exhaust gas temperature at which optimum fuel economy is obtained from the engine, means for generating a first control signal as a function of the difference between said exhaust gas temperature signal and the first temperature signal, means for generating a second control signal as a function of the difference between said exhaust gas temperature signal and the second temperature signal, means for generating an engine speed signal as a function of the speed of the engine, and means responsive to said engine speed signal for selecting one of said first or second control signals as said fuel ratio control signal.

4,452,208

MODULAR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE WITH SUPERCHARGING

Luigi Merlini; Aldo Bassi, and Giuseppe Satta, all of Milan, Italy, assignors to Alfa Romeo Auto S.p.A., Naples, Italy

Filed Feb. 25, 1983, Ser. No. 469,684

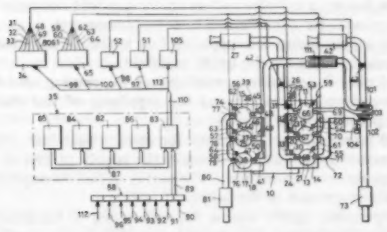
Claims priority, application Italy, Feb. 26, 1982, 19884 A/82

Int. Cl.³ F02B *11/02*

U.S. Cl. 123—481 **10 Claims**

1. A multi-cylinder Otto cycle internal combustion engine for motor vehicles having manual adjustment means for controlling the power required of said engine, said engine having a feed arrangement for an air and petrol mixture, said feed arrangement comprising mixture throttle means, supercharging means and mixture feed shut-off means operationally connected to actuator feed means and to means for controlling actuation as a function of prechosen engine parameters and of the power required of the engine, the engine being also pro-

vided with an exhaust system for the gaseous products of combustion, and with an ignition system comprising spark plugs operationally connected to actuator means and to means for controlling the actuation of said spark plugs as a function of prechosen engine parameters, the engine being also provided with sensors for said engine parameters, and with measuring devices for measuring the operating conditions of said manual adjustment means and operationally connected to said means for controlling the actuation ofsaid throttle means, of said mixture feed shut-off means, of the supercharging means and of the spark plugs, said engine being characterised by comprising a first group of cylinders having a high geometrical compression ratio with a value exceeding 12.5:1, and a second group of cylinders having a geometrical compression ratio with a maximum value of 9.5:1, the first group of cylinders being connected to a first mixture feed system provided with a first of said mixture throttle means, the second group of cylinders being connected to a second mixture feed system provided with a second of said mixture throttle means, the feed system of the second group of cylinders being also provided with said



supercharging means and with said mixture feed shut-off means, said first and second mixture throttle means being operated by respective first and second actuators, said actuation control means being operationally connected to said first and second actuators, to said supercharging means and to said mixture feed shut-off means in order to cause said first mixture throttle means to meter the mixture feed to said first group of cylinders to cause said mixture feed shut-off means to interrupt mixture feed to the second group of cylinders for predetermined values of prechosen engine parameters and for required engine powers less than the values pertaining to a prechosen limiting curve, and in order to cause said mixture feed shut-off means to restore mixture feed to the second group of cylinders, to cause said supercharging means to increase the feed pressure of the mixture feed system of the second group of cylinders up to a predetermined value, and to cause said first and second mixture throttle means to meter the mixture feed to the respective groups of cylinders for further predetermined values of said prechosen engine parameters and for power requirements greater than those of said limiting curve, up to the values pertaining to the engine maximum power curve.

4,452,209

AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yoshiaki Ohara, and Hideo Yabuhara, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

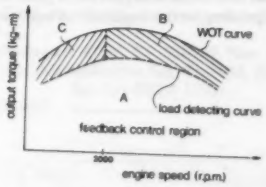
Filed Jan. 7, 1982, Ser. No. 337,631
Claims priority, application Japan, Jan. 16, 1981, 56-5613
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—489 **8 Claims**

1. In an air-fuel ratio control system for a vehicle powered by an internal combustion engine having an induction passage, a carburetor communicating with said induction passage, and a feedback control circuit including an electromagnetic valve means for correcting the air-fuel ratio of an air-fuel mixture supplied to said carburetor, an O_2 sensor for detecting oxygen density in exhaust gases from the engine, and a control circuit responsive to the output of said O_2 sensor for producing a control signal for driving said electromagnetic valve means for correcting the air-fuel ratio to a stoichiometric value when the load condition of the engine is below a predetermined heavy load value; the improvement comprising:

first detecting means for detecting the load condition of the engine;

second detecting means for detecting the engine speed; and

logic circuit switch means for operatively disconnecting said feedback control circuit when the load condition of the



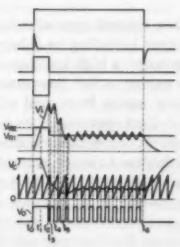
engine exceeds said predetermined heavy load value and in this load condition for operatively supplying to said electromagnetic valve means at least two rich signals, respectively, depending on the respective engine speed, said at least two rich signals being representative of two rich air-fuel ratios, respectively, one of said rich signals being representative of an air-fuel ratio which is richer than the air-fuel ratio of the other of said two rich signals being supplied to said electromagnetic valve means when said engine speed is less than a predetermined engine speed in said above-mentioned load condition.

4,452,210

FUEL INJECTION VALVE DRIVE CIRCUIT

Takao Sasayama, Hitachi, and Kazuo Kato, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,885
Claims priority, application Japan, Sep. 21, 1981, 56-147852
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—490 **8 Claims**



1. A fuel injection valve drive circuit comprising an output circuit for supplying current to a fuel injection valve winding, a detection circuit for detecting the current supplied to said fuel injection valve winding and providing a current signal, a reference signal generating circuit for producing a certain reference signal, a control circuit for controlling said output circuit basing on the difference between said current signal provided by said detection circuit and said reference signal provided by said reference signal generating circuit, and a valve opening command circuit which activates said output circuit only during the period of a valve opening command to said fuel injection valve, characterized in that said control circuit comprises a first circuit for producing a control signal

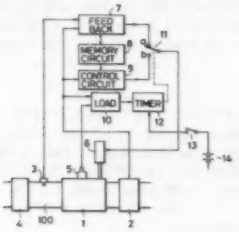
basing on the difference between the current signal provided by said detection circuit and the reference signal provided by said reference signal generating circuit and a second circuit for producing a pulse width modulation signal in accordance with the magnitude of the control signal provided by said first circuit, said output circuit being driven by the pulse width modulation signal provided by said second circuit, wherein said second circuit comprises a circuit for generating a periodic wave signal having a predetermined frequency, and a comparator which compares the periodic wave signal provided by said periodic wave generting circuit with the control signal provided by said first circuit and provides a pulse width modulation signal depending on the magnitude of said control signal.

4,452,211

AIR-FUEL RATIO CONTROL APPARATUS

Seiji Wataya, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hiroshima, Japan

Filed Apr. 6, 1983, Ser. No. 482,645
Claims priority, application Japan, Apr. 6, 1982, 57-58688
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **1 Claim**



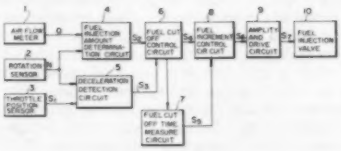
1. In an air-fuel ratio control apparatus for an internal combustion engine of a type including an exhaust component detector; means for detecting a high-load operating state of said internal combustion engine; a fuel flow control valve; a feedback circuit receiving inputs from said exhaust component detector and said high-load operating state detecting means; an open-loop control circuit comprising memory means for storing an output of said feedback circuit; control circuit means for producing on an output thereof a constant open-loop control signal at a level determined in accordance with an output of said memory means; and switch means operating in response to said output of said means for detecting said high-load state for coupling an output of said feedback circuit to operate said fuel flow control valve in a normal operating state and coupling an output of said open-loop control circuit to operate said fuel flow control valve in said high-load state, wherein the improvement comprises: means for delaying said output of said means for detecting said high-load state upon said output of said means for detecting said high-load state making a transition from a level corresponding to said normal state to a level corresponding to said high-load state, whereby said open-loop control circuit operates said fuel flow control valve in said high-load state in accordance with an output value of said feedback circuit produced in said high-load state such that errors in an air-fuel ration of said engine are minimized in said high-load state.

4,452,212

FUEL SUPPLY CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Sadao Takase, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 25, 1982, Ser. No. 342,249
Claims priority, application Japan, Jan. 26, 1981, 56-8952
Int. Cl.³ F02D *33/00*
U.S. Cl. 123—493 **6 Claims**



1. A fuel supply control system for an internal combustion engine having a cylinder and an intake manifold connected to said cylinder for admitting air to same, comprising:

fuel supply means for supplying fuel to the air admitted to said cylinder via the intake manifold;

fuel cut-off operation control means for causing said fuel supply means to suspend the supplying of fuel during operation of the engine;

fuel increment control means for causing said fuel supply means to increase, in amount, the supply of fuel in response to a resumption of the supply of fuel subsequent to the suspension of the supply of fuel;

temperature sensor means for generating a temperature signal indication of the temperature of the intake manifold;

an air flow meter associated with the intake manifold;

an air amount integration means coupled with said air flow meter for generating an integrated signal indicative of an amount of air admitted to said cylinder via the intake manifold;

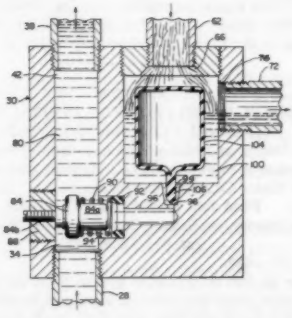
wherein said fuel increment control means is operative for controlling the supply of fuel in response to said temperature signal and integrated signal.

4,452,213

DIESEL FUEL CONTROL VALVE AND SYSTEM

Wayne R. Duprez, Standard-Thomson Corporation, 152 Grove St., Waltham, Mass. 02154

Continuation of Ser. No. 57,398, Jul. 13, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,486
Int. Cl.³ F02M *37/20*; B01D *53/22*
U.S. Cl. 123—516 **6 Claims**



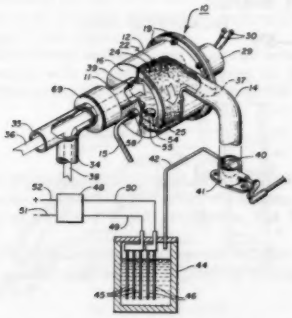
1. A compact fuel control valve device adapted for use in a diesel engine fuel supply system including a fuel supply tank, a fuel supply conduit extending from the tank to the diesel en-

gine, and a heated fuel and air conduit extending from the engine to the fuel supply tank for conducting from the engine a mixture of heated fuel and air entrained in the heated fuel, said fuel control valve device comprising a valve body defining a valve chamber having an upper portion and a lower portion, said valve body defining a fuel supply passage extending through said valve body and being connected to the fuel supply conduit for directing fuel from the supply tank through said fuel supply passage to the diesel engine, said valve body further defining a fuel recirculating passage connecting said lower portion of said valve chamber to said fuel supply passage, an annular valve seat surrounding said fuel recirculating passage, a buoyant valve member disposed for generally vertical movement within said valve chamber, a closure element connected to said valve member and positioned adjacent said valve seat for controlling the flow of heated fuel from said valve chamber through said recirculating passage into said fuel supply passage in response to vertical movement of said valve member within said valve chamber, said heated fuel and air conduit being connected to said upper portion of said valve chamber directly above said valve member, the cross-sectional area of said valve chamber being sufficiently small relative to the cross-sectional area of said heated fuel and air conduit to provide for directing all of the mixture of heated fuel and entrained air downwardly within said valve chamber directly upon and around said valve member while the diesel engine is operating, said valve member being positioned to receive and sense the mixture of heated fuel and entrained air flowing downwardly around said valve member such that said valve member responds to the proportions of heated fuel and air within the mixture while air separates from the mixture for conduction to the fuel supply tank by said heated fuel and air conduit, a thermally responsive valve unit positioned within said valve body at the junction of said fuel supply passage and said fuel recirculating passage, and said valve unit including means for controlling the flow of heated fuel through said recirculating passage in response to the temperature of the fuel flowing through said fuel supply passage, to provide a compact valve system for efficiently using the return fuel heated by the engine and adapted to require relatively small space adjacent the engine.

4,452,214
FUEL MIXING DEVICE

Byron M. Dahl, Watertown, S. Dak., assignor to Fuel Efficiency Co., S. Dak.

Filed Sep. 14, 1981, Ser. No. 301,955
Int. Cl.³ F02M *17/26*
U.S. Cl. 123—523 **16 Claims**



1. A fuel mixing device for producing an air/fuel mixture for use in the combustion chambers of an internal combustion engine comprising:

a fuel atomization chamber;

a rotatable atomization drum disposed within said fuel atomization chamber and adapted for rotation about its axial axis, said atomization drum having a side wall comprised of a porous, mesh-like material and forming a closed side wall loop around said axial axis;

means for rotating said atomization drum;

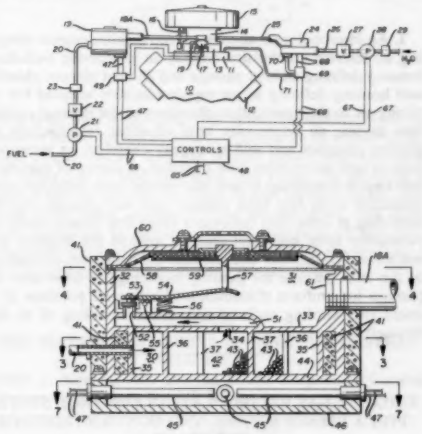
means for maintaining a level of fuel within said fuel atomization chamber sufficient to contact at least a portion of the side wall of said rotatable atomization drum; and

means for directing a supply of atomizing air to the interior of said closed side wall loop and through said side wall to produce said air/fuel mixture.

4,452,215
FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINES

James W. Glass, New Castle, Pa., assignor to Ennco Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 321,820, Nov. 16, 1981, Pat. No. 4,423,716. This application Sep. 23, 1982, Ser. No. 421,898
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **6 Claims**



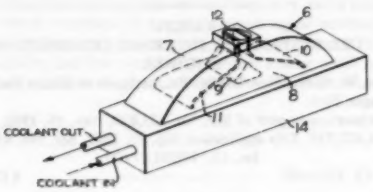
1. A fuel sypplying system for an internal combustion engine having an inlet manifold, comprising:

a device in communication with said inlet manifold, air supplying means in communication with said device, a throttle valve in communication with said device, a valve responsive in operation to inlet manifold pressure upstream of said throttle valve, a hot fuel gas generator upstream of said pressure responsive valve, fuel supplying means adapted to supply liquid fuel to said hot fuel gas generator and temperature sensor means in said system adjacent said throttle valve for emitting signals representative of temperature in said system; signal comparator/-controller means coupled to said sensor means; heating means positioned in said hot fuel gas generator coupled to said comparator/controller means and responsive to said signals for regulating said heating means so as to maintain known temperatures therein sufficiently to gasify said liquid fuel, said hot fuel gas generator consisting of a double chambered body member, a passageway between said double chambers, said inlet manifold pressure responsive valve upstream of said throttle valve being located in one of said chambers and controlling said passageway, said heating means located in the other of said chambers, an inlet port communicating with said other chamber, said fuel supplying means communicating with said inlet port, accelerator linkage for said internal combustion engine connected with said throttle valve so that said throttle valve finally controls the hot gaseous fuel supplied the engine through said device.

4,452,216
EVEN TEMPERATURE INTERCOOLER

Paul Patchen, II, Homewood, and Colin C. Chen, Lansing, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 27, 1982, Ser. No. 424,008
Int. Cl.³ F02M *31/00*; F01F *1/32*
U.S. Cl. 123—563 9 Claims



1. An intercooler on an internal combustion engine comprising, an internal combustion engine, an intercooler including a housing defining an inlet passage and an inlet plenum chamber, said housing defining an air supply chamber adapted for supplying air to the combustion chambers of the internal combustion engine, an intercooler core chamber intermediate said plenum chamber and said air supply chamber, an intercooler core in said intercooler core chamber, a source of coolant on said engine connected to said intercooler core, deflector means extending from said inlet passage into said plenum chamber including at least two deflectors extending downwardly and outwardly from said inlet passage toward the housing walls and an air flow divider intermediate the deflectors downstream of the inlet passage for guiding incoming air from said inlet passage for uniform distribution of air to all portions of the intercooler cooling surfaces and uniform cooling of air flow through the intercooler.

4,452,217
EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR A DIESEL ENGINE AND CONTROL METHOD THEREFOR

Yoshihisa Kawamura; Gilchi Shicyama; Toyoaki Nakagawa, all of Yokosuka, and Masao Nakajima, Atsugi, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 12, 1982, Ser. No. 441,038
Claims priority, application Japan, Nov. 17, 1981, 56-184099
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 14 Claims

1. An exhaust gas recirculation control system for an internal combustion engine comprising:

a first sensor for producing a first sensor signal representative of engine revolution speed;

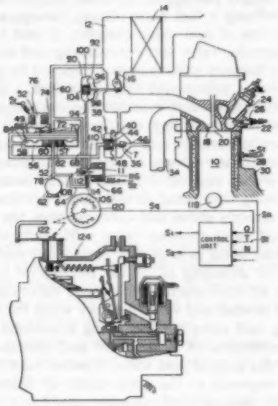
a second sensor for producing a second sensor signal representive of the load on the engine;

first means for controlling a fuel injection amount based on said first and second sensor signal values, said first means producing a first control signal indicative of the fuel injection amount;

second means for controlling an intake air flow rate between a first full rate condition and a second limited-rate condition, said second means including a first actuator operative between first position and a second position to operate said second means between said first full-rate condition and said second limited-rate condition, said first position of said first actuator corresponding to said first full-rate condition of said second means and said second position thereof corresponding to said second limited-rate condition;

third means for controlling a throttling rate of an exhaust gas recirculation passage on the basis of said first sensor signal value and said first control signal value, said third means including a second actuator for operating said third means to control said throttling rate; and

fourth means for producing second and third control signals respectively adapted to be applied to said first and second actuators, said fourth means determining a first engine operation range in which said first means is to be operated in said second limited-rate condition on the basis of first

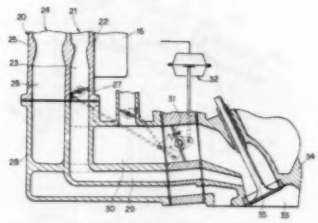


signal value and said first control signal value and producing said second control signal for controlling said first actuator in one of said first and second positions depending upon the engine operating condition within or out of said first range, said fourth means determining the duty cycle of said third control signal for controlling the operation of said second actuator on the basis of said first sensor signal value and said first and second control signal values.

4,452,218
DUPLEX CARBURETOR AND INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hiroshi Yokoyama, and Tokuzi Ishida, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kami, Japan

Filed Jan. 8, 1982, Ser. No. 338,079
Claims priority, application Japan, Jun. 24, 1981, 56-96735; Jun. 24, 1981, 56-96736
Int. Cl.³ F02B *13/00*
U.S. Cl. 123—579 19 Claims



1. A duplex carburetor for use with an intake manifold having a pair of common inlet passages for an internal combustion engine, said duplex carburetor comprising:

a primary barrel adapted to be connected to one of the inlet passages of the intake manifold for supplying an air-fuel mixture thereinto under a full range of load conditions of the engine;

a secondary barrel adapted to be connected to the other inlet passages of the intake manifold for supplying an air-fuel mixture thereinto under higher load conditions;

said secondary barrel having a flattened cross-sectional shape defining perpendicular major and minor axes, said cross-sectional shape having a dimension along said major axis which is larger than the dimension along said minor axis; and

said primary and secondary barrels being located adjacent each other with said primary barrel being positioned adjacent a side of said secondary barrel, which said side is intersected by said minor axis.

4,452,219

INDUCTION REGULATOR FOR AN INTERNAL COMBUSTION ENGINE

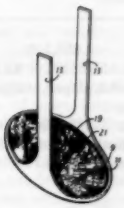
John F. Tay-Lodge, Flats 3/5, 12 Albert Rd., Southport, Merseyside, and Bernard L. Proudlock, 44 Briar Rd., Ainsdale, Southport, Merseyside, both of England

Filed May 5, 1982, Ser. No. 374,956

Claims priority, application United Kingdom, May 19, 1981, 8115234; Sep. 16, 1981, 8127916; Oct. 20, 1981, 8131539

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—591 **9 Claims**



1. An induction regulator for a carbureted internal combustion engine having an inlet manifold mounting the carburetor to the engine, the regulator being disposed in the inlet manifold downstream of the carburetor and comprising

a perforated element which acts to improve atomization of fuel and mixing of fuel and air in allowing passage of fuel/air mixture therethrough on its passage to the engine,

an open top reservoir for retaining excess unvaporized fuel, said reservoir being secured to the downstream side of the perforated element and having its open top contiguous to and covered by said perforated element so that retained fuel must be returned through the perforated element for passage to the engine, and

attachment means including two elongated mounting straps connected with the perforated element for locating said regulator in the inlet manifold downstream of the carburetor.

4,452,220

ELECTRONICALLY CONTROLLED IGNITION SYSTEM

Willy Minner, Schwaigern, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

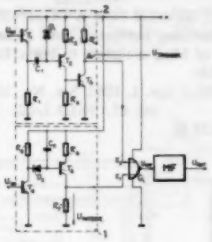
Filed Jul. 12, 1982, Ser. No. 397,404

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127230

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—644 **5 Claims**

1. An electronically controlled ignition system comprising an ignition coil having a primary winding, means for supplying primary current to said primary winding at a timing which is controlled in accordance with speed, said primary current only reaching the value required for ignition shortly before the moment of ignition, means for determining immediately before the moment of ignition whether said primary current has reached said value required for ignition, said determining means comprising means for deriving a test pulse dependent on the duration for which said primary current is at said value required for ignition, said test pulse switching off the electronic control for a fixed period when there is no primary current or insufficient primary current to prevent misfiring, and an ignition pulse generator producing a control signal the timing of said primary current being derived directly from said control signal, wherein the system further comprises an integrating stage, said integrating stage extending said test pulse by a predetermined period of time to produce an extended pulse, a logic circuit having first and second inputs, said extended pulse being fed to said first input and means for deriving a trigger pulse for the trailing flank of said control signal, said trigger pulse being supplied to said second input, said logic circuit producing an output pulse for switching off the electronic control only if said integrating stage does not produce a said extended pulse during the said trigger pulse.



4,452,221

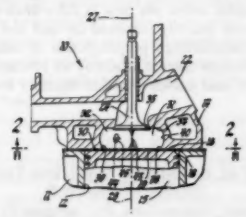
HIGH SQUISH DUAL SWIRL ENGINE COMBUSTION CHAMBER

Edward J. Keating, Mt. Morris, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1983, Ser. No. 479,141

Int. Cl.³ F02B *23/00*

U.S. Cl. 123—661 **3 Claims**



1. A combustion chamber of an internal combustion engine defined between a cylinder having an axis and a piston reciprocable in the cylinder, said combustion chamber comprising essentially conforming opposing end surfaces of said piston and cylinder disposed in close opposition at the piston top dead center position and defining a squish area, and a subchamber in one side of said squish area and extending into at least one of said end surfaces to define an essentially eight (8) shaped cross section when viewed in plan, said subchamber being formed by two smaller essentially circular adjoining subcylinders having walls intersecting essentially in a diametral plane of said cylinder dividing the subchamber, to form at the intersecting edges of the subcylinders opposing wedge-like wall projections lying essentially in said diametral plane, an exhaust valve opening to said subchamber between said projections, an ignition device within said subchamber nearer to the cylinder axis than to its

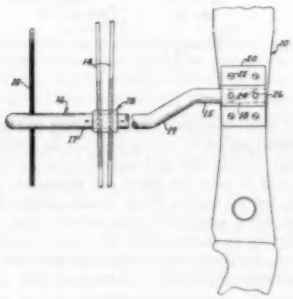
periphery, and an intake valve opening to the combustion chamber in said squish area opposite the subchamber and in said diametral plane, said squish area being effective during the piston compression stroke to force compressed charges into said subchamber, largely from across said cylinder, to be guided by said projections into dual swirling flows that maximize the combustion rate when the charges are ignited by the ignition means near the piston top dead center position.

4,452,222

CABLE GUARD FOR A COMPOUND BOW

Miguel A. Quartino, Bridgeton, and Thomas R. Mundt, St. Louis, both of Mo., assignors to Hoyt/Easton Archery Co., Bridgeton, Mo.

Filed Apr. 1, 1982, Ser. No. 364,247
Int. Cl.³ F41B 5/00
U.S. Cl. 124—24 R **1 Claim**



1. In combination with a compound bow having a handle section and a pair of bow limbs, a bow string and a pair of cables extending between the outer ends of the bow limbs in lateral spaced relationship, with respect to the plane of the bow and bow string, and a cable guard comprising a rod connected at one end to said handle section and extending therefrom parallel to said plane and in outward spaced relationship with that side of said cables opposite said bow string to a free end beyond said cables when the bow is fully drawn, and a cable retaining member slidably mounted on said rod and having a pair of bores therethrough perpendicular to said rod slidably receiving said cables therein whereby an intermediate portion of the length of said cables is pulled laterally away from said bow string.

4,452,223

CYLINDRICAL GRINDING MACHINE TRUING AND DRESSING DEVICE

William E. Shank, Waynesboro, Pa., assignor to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Sep. 3, 1982, Ser. No. 414,847
Int. Cl.³ B24B 53/04
U.S. Cl. 125—11 R **5 Claims**

1. A cylindrical grinding machine truing and dressing device for refinishing the surface of a peripheral grinding wheel of a cylindrical grinder comprising

support base attached to the work bed of a cylindrical grinding machine,

housing means mounted to said base having

means for rotatably supporting rotatable truing tool means,

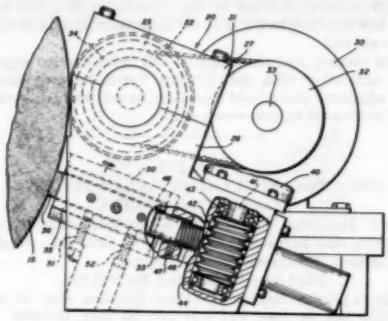
means for slidably housing dressing bar and abrasive block means,

motor drive means to rotatively power said truing tool means,

timing belt means to transmit rotative power to said truing tool means,

stepping motor means to axially displace said dressing bar and abrasive block means,

worm gear means for translating said stepping motor rotation into dressing bar axial displacement,



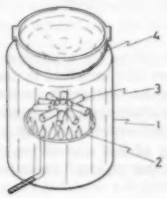
said axial displacement precisely controlled to forcefully engage grinding wheel before, during and after truing operation.

4,452,224

CASSEROLE SET

Yoshiro Misumida, Osaka, Japan, assignor to Tofle Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1982, Ser. No. 404,718
Claims priority, application Japan, Jul. 23, 1982, 57-129428
Int. Cl.³ A41J 37/00
U.S. Cl. 126—41 R **4 Claims**



1. A casserole cooking apparatus for simulating Japanese style charcoal-fire casserole cooking, consisting essentially of:

a housing having an opening in the top portion thereof;

volcanic rocks supported within said housing beneath said opening;

a gas burner within said housing for heating said rocks to a temperature sufficiently high to cause said rocks to glow; and

a transparent vessel supported by said housing on the periphery of said opening for permitting viewing of said rocks during cooking of foodstuff within said vessel.

4,452,225

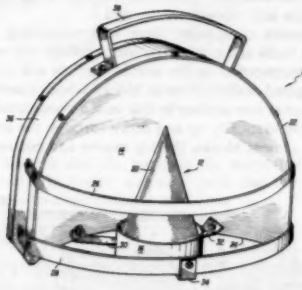
PORTABLE, AUXILIARY, RADIANT CHIMNEY EFFECT HEATER

David F. Plant, 10811 NE. 143, Kirkland, Wash. 98033

Filed Jun. 14, 1983, Ser. No. 504,126
Int. Cl.³ F24C 3/04
U.S. Cl. 126—92 B **8 Claims**

1. A portable, auxiliary augmenting heating apparatus arranged for use with a source of open flame heat such as an otherwise conventional gas stove burner or the like, comprising; an open, cylindrical base, dimensioned and arranged to be positioned over an open flame; a conical, open mesh radiating element mounted on said base and constructed of heat resistant

material which, when heated, is brought to red heat; semi-parabolic reflector means partially surrounding said radiating element, said radiating element being located at the approximate focal point of said reflector means, said reflector means terminating in a first curved edge lying generally within a vertical plane and a second curved edge lying generally within a horizontal plane; means for mounting said radiating element within said reflector means at the location as aforesaid; semi-circular guard means mounted on opposed edges of said reflector means and extending across the open side of said reflector



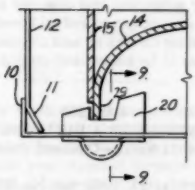
means, thus to surround said radiating element; semi-cylindrical casing means attached to said curved edge of said reflector means, thus to house said reflector means; and handle means mounted on said casing means; said heating apparatus, when placed over a source of open flame, thus functioning as a chimney to draw combustion products and heat into said radiating element, said radiating element, upon heating, glowing in the infrared spectrum and simultaneously assuring completion of combustion of the gases drawn to the screen and elimination of condensation of water within a space wherein said heating apparatus is located.

4,452,226

WATER HEATER TANK ASSEMBLY

Paul G. Daugirda, Evergreen Park, Ill., and Keith R. Clark, Montgomery, Ala., assignors to Rheem Manufacturing Company, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,530
Int. Cl.³ F24H 1/04
U.S. Cl. 126—373 **4 Claims**



1. In a water heater of the type including a storage tank having a lower edge, a jacket surrounding the storage tank, a base, support means for maintaining the storage tank lower edge in spaced relation to the base and supported by the base, said jacket also being supported by the base, the improvement comprising, in combination:

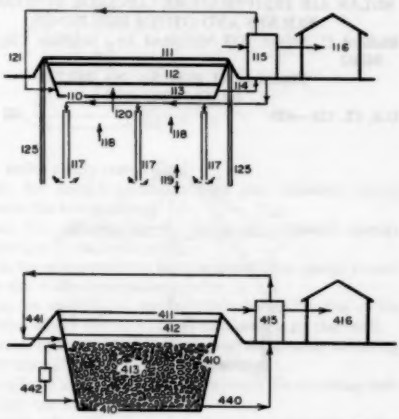
improved support means, said support means comprising a plurality of formed leg members, each leg member including a generally planar, horizontal run, and a generally transverse vertical run extending from the horizontal run, said horizontal run also including a boss projecting vertically in the opposite direction from the transverse run, said transverse run formed with an upper edge surface inclined relative to the horizontal to define a shear member for cutting through the base upon assembly with the base, said transverse run also including a notch for receipt of and support of the lower edge of the tank, and said horizontal run positioned beneath the base so that the vertical run cuts through and projects through the base.

4,452,227

ACTIVE THERMAL STORAGE USING THE GROUND UNDERLYING A SOLAR POND

O. Preston Lowrey, III, 1009 Burch Ave., Durham, N.C. 27701

Filed Jun. 14, 1982, Ser. No. 388,416
Int. Cl.³ F24J 3/02
U.S. Cl. 126—415 **6 Claims**



1. A thermal storage and retrival apparatus comprising:

(a) a solar pond having a convection suppressing layer containing a thermocline;

(b) a zone of permeable material comprised predominantly of the generally undisturbed ground which was at the site preceding construction of said solar pond, and predominantly located below said convection suppressing layer containing a thermocline, whereby said zone of permeable material is well insulated above by said convection suppressing layer;

(c) means for circulating a fluid heated predominantly with heat collected in said solar pond through said zone of permeable material wherein one or more pumps and one or more shallow wells penetrating into said zone of permeable material are part of said means for circulating a fluid, whereby said heat can be transmitted to said permeable material in large amounts; and

(d) means for removing stored heat as required from said zone of permeable material by forced circulating a fluid through said zone of permeable material, and/or by natural convection or conduction upward through said zone of permeable material into the overlying solar pond.

6. A thermal storage and retrival apparatus comprising:

(a) a solar pond having a convection suppressing layer containing a thermocline;

(b) a zone of permeable material comprised predominantly of material placed within said solar pond during construction, whereby gravel could be placed in the bottom of a solar pond inside of the solar pond liner and function as part or all of said zone of permeable material, and predominantly located below said convection suppressing layer containing a thermocline, whereby said zone of permeable

material is well insulated above by said convection suppressing layer;

(c) means for circulating a fluid heating predominantly with heat collected in said solar pond through said zone of permeable material wherein one or more circulation pumps or extraction pumps are part of said means of circulating a fluid, whereby said heat can be transmitted to said permeable material in large amounts; and

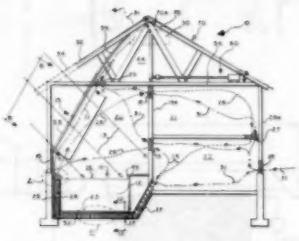
(d) means for removing stored heat from said zone of permeable material as required by forced circulating a fluid through said zone of permeable material, and/or by natural convection or conduction upward through said zone of permeable material into the overlying solar pond.

4,452,228

SOLAR AIR TEMPERATURE CONTROL SYSTEM FOR HOUSES AND OTHER BUILDINGS

Richard C. Meyer, 813 Medoland Dr., Brigham City, Utah 84302

Filed Apr. 13, 1981, Ser. No. 253,733
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—428 **32 Claims**



1. A solar air temperature control system for houses and other buildings having enclosed interior air space having at least a part of the sunward portion thereof separated from the remaining portion thereof by interior wall means, said system comprising:

a pool structure adapted to contain water, being within said separated sunward portion of the interior air space and adjacent a sunward exterior wall of the building, and comprising a bottom and serially connected sides each upstanding from said bottom;

a glazed window in said sunward wall, placed to admit winter sunlight upon the pool of water;

pool air passage means with open entrance means within said separated remaining portion of the interior air space, extending transverse to the pool structure at a lower portion thereof to connect with an upwardly extending leg of the passage at the side of the pool near said sunward wall to open into the air space above the pool, so that heat energy is exchanged between the air in the passage and the water in the pool;

air passage means through said interior wall means connecting said separated sunward portion with at least a part of said remaining portion; and

retractable thermal insulation means adapted for selectably impeding the transfer of thermal energy into and out of the building through the window.

4,452,229

THERMAL HEAT STORAGE AND COOLING SYSTEM

Kim Powers, 2740 Kiawah Ave., Columbia, S.C. 29205

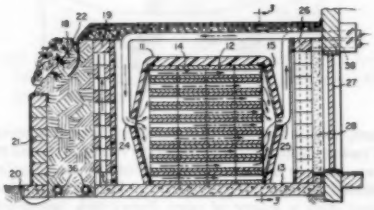
Filed Nov. 13, 1981, Ser. No. 321,222
Int. Cl.³ F25B *13/00*
U.S. Cl. 126—429 **8 Claims**

1. In combination with a house or other structure, a solar energy collector for heating air, and an auxiliary gas heater for heating air, the improved thermal heat storage and cooling system comprising:

storage means, for storing heat or cold, having a superinsulated cube of hollow cement blocks assembled on a concrete slab, each of said hollow cement blocks being positioned so that their apertures communicate with one another so as to form a series of horizontal passageways for air through the interior of said hollow cement blocks, and

external enclosure means, external to the area to be heated or cooled but attached thereto on any side, forming a room to enclose said storage means, and

cooling means comprising three interconnecting exterior cooling walls and a single interior cooling wall each said wall waterproofed on the interior surface and comprised of staggered hollow cement blocks whose apertures are aligned over one another so that cool air generated therein can move vertically up and down through the column of hollow cement blocks, the top course and bottom course



of said hollow cement blocks adapted so as to have a single aperture and staggered so that cold air from one column of hollow cement blocks can travel horizontally to the adjacent column of hollow cement blocks, permitting continuous air movement through the interior of said three interconnecting exterior cooling walls and said single interior cooling wall when air is pulled through by circulation means, and

circulation means, to carry air to and from said area to be heated and cooled, having a network comprised of metal ducts, input pipe, output pipe, cooling wall input, cooling wall output, underground pipe, and cold air duct, which said network interconnects said solar energy collector, said storage means and said cooling means with said area to be heated and cooled and with each other, and

a roof, filled with insulating material, which with said external enclosure means and said concrete slab form an enclosure for said storage means and said cooling means used to heat and cool air carried by said circulating means to and from said area to be heated and cooled.

4,452,230

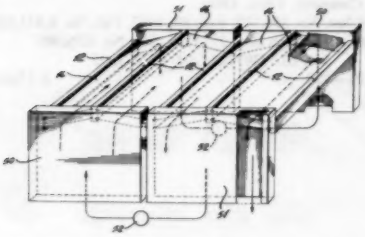
CANOPY SYSTEM FOR A BUILDING STRUCTURE

Richard C. Nelson, 31 Sunrise Crescent, Pointe Claire, Quebec, Canada

Filed May 23, 1980, Ser. No. 152,809
The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—431 **17 Claims**

1. A canopy system for a building structure comprising at least one tubular panel formed of flexible impermeable sheet material, the panel including an open ended hollow sleeve with two side walls, a top exterior sheet and a bottom interior sheet being joined, sealed and having support means at the joins between the side walls and the top and bottom sheets, the top and bottom sheets extending across and separately supported by the support means at each side of the panel by the building structure, one supported side of the panel being at a higher elevation than the other supported side of the panel, a pressure

manifold system to which each end of the open ended hollow sleeve is joined and through which air is circulated to control the pressure within the panel, and liquid feed means for delivering a liquid within the panel at the supported side of the panel having the higher elevation such that the liquid flows transversely to the circulated air flow.

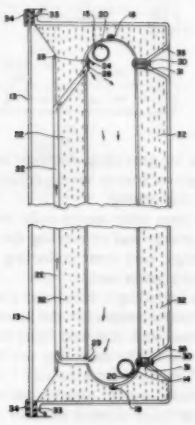


4,452,231

INTEGRAL SOLAR WATER HEATERS

Ahmad M. El-Shayeb, 5 Mohamad Anis St., Zamalek, Cairo, Egypt (R.C. 34643)

Filed Aug. 9, 1982, Ser. No. 406,186
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—434 **9 Claims**



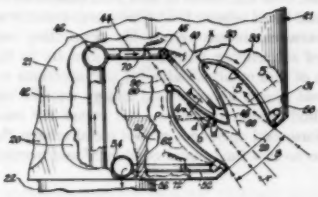
1. A solar water heating apparatus comprising:
a plurality of longitudinal tubular storage tanks positioned adjacent one another in a stacked array,
a cold water inlet pipe directed through each tank nearest the bottom end, a hot water outlet pipe directed through each tank nearest the top end,
a heat conducting plate associated with each tubular member each plate having a pipe in thermal contact therewith, with said pipe having a first opening directed into the bottom of said associated tubular member and a second opening directed into the top of said tubular member,
a counter balanced valve member coupled to said storage tank and operative to block said second opening for pressures below a given pressure whereby water flows via said pipe only from said first opening to said second opening to open said valve for said given pressure as dependent upon the heat rise of said heat conducting plates and therefore said associated pipes, said counter balanced valve member comprises an "L" shaped member having a diaphragm section for covering said second opening and forming one half of said "L" with a stem member depending therefrom forming the other half of said "L", with a pivot point located at the base of said "L" and means for pivotally mounting said valve member to said storage tank.

4,452,232

SOLAR HEAT BOILER

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Filed Dec. 17, 1982, Ser. No. 450,727
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **5 Claims**



1. A boiler cavity comprising:
means for supplying concentrated sun radiation energy inside the boiler cavity;
means for distributing the incoming radiation energy throughout the boiler cavity;
means for depositing this incoming radiation energy evenly on the walls of the boiler cavity;
means for maintaining the temperatures of the wall of the boiler cavity almost equal at all locations on that wall;
a central section of boiler cavity wall for directly receiving the sun radiation;
a peripheral section of boiler cavity wall for receiving indirectly the sun radiation;
means for providing that central section surface facing the incoming radiation energy to have a high reflectivity;
means for providing that peripheral section surface facing the central section to have a high absorptivity;
means for providing the removal of the heat deposited on the wall of the boiler cavity by a cooling fluid to be used elsewhere;
means for monitoring the cooling fluid flow to match the heat removal needed to keep the temperatures of the boiler cavity wall equal; and
means for introducing and collecting the cooling fluid at locations on the boiler cavity wall such that the temperature differences between the cooling fluid and the boiler cavity wall are kept constant and close to the values required to insure maximum efficiency of the heat transfer process that takes place.

4,452,233

SOLAR ENERGY COLLECTOR

Maurice Goodman, Jr., 177 E. 80th St., New York, N.Y. 10021, and Mark W. Garrigus, 131 Garrigus Ct., Wolcott, Conn. 06716

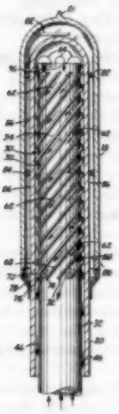
Filed Mar. 4, 1982, Ser. No. 354,850
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **5 Claims**

1. A solar energy collector assembly of the kind having a fluid flowing therethrough, said system comprising:
a manifold elongated along a horizontal axis and having a fluid inlet conduit extending parallel with the axis of and within said manifold, said manifold having a plurality of apertures longitudinally spaced one from the other along the upper length of said manifold with axes of said apertures substantially normal to the axis of said manifold, said manifold having a fluid outlet conduit surrounding said inlet conduit, communicating with said apertures and

extending substantially the length of said manifold to a fluid outlet;

a plurality of elongate metal, tubular fluid conductors extending substantially coaxially with the axes of said apertures and being connected at their lower ends to and communicating with said inlet conduit and extending upwardly through said fluid outlet conduit and above said apertures a predetermined distance to their distal ends, said distal ends being open;

a plurality of metal energy transfer tubes having open ends and closed ends and dimensioned to be and concentrically disposed over said metal tubular fluid conductors forming with said metal tubular fluid conductors concentric spaces therebetween, means removably connecting said open ends of said energy transfer tubes directly to the upper length of said manifold adjacent said apertures to constitute said spaces between said energy transfer tubes and said fluid conductors as conduit means for conducting fluid form said open ends of said metal tubular fluid conductors to said fluid outlet conduit of said manifold;



a plurality of outer glass envelopes with closed distal ends concentrically disposed over said metal energy transfer tubes and extending downwardly to their proximate ends at a substantially horizontal plane above said means connecting said energy transfer tubes to said manifold and forming with said transfer tubes annular spaces therebetween;

means between said metal energy transfer tubes and the proximate ends of said glass envelopes for forming vacuum tight seals, said spaces between said glass envelopes and said energy transfer tubes being evacuated;

means for maintaining the spaces between said glass envelopes and said metal energy transfer tubes; and

a plurality of helices extending around each said metal tubular fluid conductors and between and in contact with the opposing concentric walls of said fluid conductors and said energy transfer tubes and forming a plurality of helical channels constituting fluid communication means between the distal ends of each of said fluid conductors and said fluid outlet conduit.

4,452,234

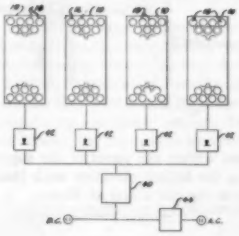
COLLAPSIBLE MOBILE SOLAR ENERGY POWER SOURCE

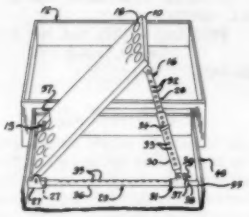
Eric M. Withjack, Broken Arrow, Okla., assignor to Cities Service Company, Tulsa, Okla.

Division of Ser. No. 350,507, Feb. 19, 1982, Pat. No. 4,421,943. This application Sep. 27, 1983, Ser. No. 536,085

Int. Cl.³ H01L *31/04*; F24J *3/02*

U.S. Cl. 126—450 **6 Claims**





1. An apparatus for providing electrical energy from a mobile solar energy power source having collapsible solar energy collecting means, comprising:

(a) at least one inner solar energy collecting means for collecting solar energy and converting the solar energy into electrical energy, said inner collecting means having an upper end and a lower end;

(b) a main base including a front and a back thereof, said main base pivotally mounted to the lower end of said inner collecting means such that said inner collecting means is free to pivot about the mounting axis between about 0° and about 90° above the horizontal;

(c) at least one inner support member for each inner collecting means, said inner support member having a first end and a second end, the first end of said inner support member pivotally connected in proximity to the upper end of said inner collecting means;

(d) means for connecting the second end of said inner support means to said main base such that said inner collecting means may be positioned at an angle between about 0° and about 90° above the horizontal; and

(e) means for storing the electrical energy received from the inner solar energy collecting means and supplying the energy to an external receptable.

4,452,235

METHOD FOR CORNEAL CURVATURE ADJUSTMENT

Alvin E. Reynolds, 7732 E. 105 St., Tulsa, Okla. 74133

Filed Jan. 4, 1982, Ser. No. 336,919

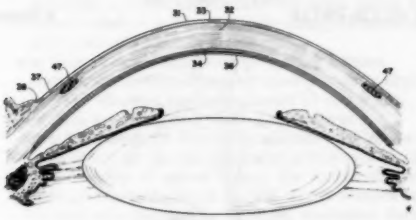
Int. Cl.³ A61B *17/00*

U.S. Cl. 128—1 R **22 Claims**

1. A method for adjusting the shape of the cornea of the eye including the steps of;

inserting one end of a split ring shaped adjusting member into the cornea at a selected beginning point;

progressively moving such one end of the adjusting member in a circular path around the interior of the cornea until it



reaches the selected beginning point and meets the trailing end of the adjusting member; and

affixing the one end and the trailing end of the adjusting member to thereby implant the adjusting member in the cornea at a desired shape of the cornea.

4,452,236

ENDOSCOPE WITH A RESILIENT RAISING MEMBER

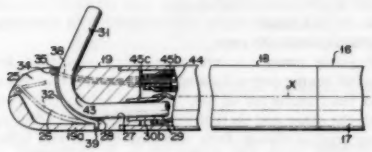
Mikio Utsugi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 7, 1982, Ser. No. 375,990

Claims priority, application Japan, May 14, 1981, 56-72739

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **8 Claims**



1. An endoscope comprising: an elongated insertion section which has a distal end portion to be inserted into a body cavity with a raising member housing open to the outside, a proximal end portion to be located outside the body cavity, a longitudinal axis extending from said proximal end portion to said distal end portion, and a treatment tool insertion channel extending from said proximal end portion to said distal end portion along said axis and communicating with said raising member housing; a control section connected to said proximal end portion of said insertion section and having a treatment tool insertion inlet port which communicates with said treatment tool insertion channel; a resilient raising member which includes an elastic plate positioned in said raising member housing and having an acting portion and a supported portion and adapted to change a guiding direction of a treatment tool as the acting portion pushes an intermediate portion of the tool and raises the same to a desired position, said supported portion being supported by part of said distal end portion of the elongated insertion section, said acting portion being movable between raised and lowered positions so that said raising member by itself is resiliently returned to the lowered position after being raised; a control wire, one end of which is connected to said acting portion of said raising member, the other end of which reaches said control section, and which is inserted in said insertion section along said axis; and a traction control unit, provided in said control section and connected to said control wire, for raising said raising member to change the guiding direction of the treatment tool.

4,452,237

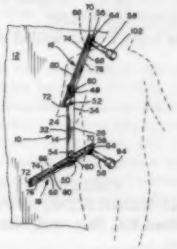
SELF ACUPRESSURE APPARATUS

Tommy K. Lewis, 1605 Henry St., Huntington, Ind. 46750

Filed Nov. 4, 1981, Ser. No. 317,991

Int. Cl.³ A61H *39/04*

U.S. Cl. 128—60 **9 Claims**



9. An apparatus generally mounted vertically on a structure for self-administering therapeutic pressure to various points or areas of the body in order to temporarily relieve certain ailments, comprising:

a plate vertically mounted on said structure,

an arm having one end rotatably connected to said plate, said arm and said plate being in juxtaposed relation and said arm being rotatably movable in a generally vertical plane parallel to said plate, said arm having a slot longitudinally disposed therein, said arm being rotatably and slidably connected through said slot to said plate,

a first bar secured to the opposite end of said arm and having a remote free end extending outwardly from said arm in a direction generally normal to said plane and said plate, and

a knob member attached to the remote free end of said bar, whereby said arm may be rotated about said plate so as to position said bar and said knob at the desired height and position for administration of selectively variable therapeutic pressure by the user.

4,452,238

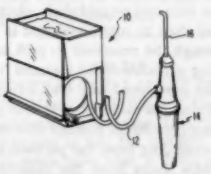
IN HANDLE DISPENSING DEVICE

Ronald R. Kerr, Ft. Collins, Colo., assignor to Teledyne Industries, Inc.

Filed Sep. 30, 1982, Ser. No. 428,902

Int. Cl.³ A61H *9/00*

U.S. Cl. 128—66 **9 Claims**



1. Oral hygiene apparatus comprising:

means for producing a sucession of water pulses at a preselected pressure;

a handle shaped to permit being grasped by the human hand;

means for delivering said water pulses from said producing means into said handle;

an elongated nozzle projecting outwardly from said handle, manipulation of said handle permitting said water pulses, flowing through said nozzle from said handle, to be directed against the teeth and gums of the user;

a reservoir for containing a liquid to be selectively dispensed along with said water pulses;

means for coupling said reservoir into communication with the flow path of said water pulses from said delivering means into said nozzle;

means including a controllable valve for selectively opening said communication to enable the conveyance of said liquid into said flow path in response to the receipt of said water pulses within said handle;

and said reservoir being a rigid-walled container.

4,452,239

MEDICAL NEBULIZING APPARATUS

Hilal Malem, 4 Rufford Rd., Sherwood, Nottingham NG5 2NR, England

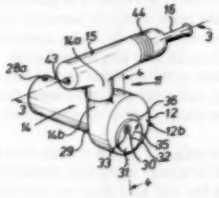
PCT No. PCT/GB81/00055, 371 Date Nov. 9, 1981, 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02676, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 24, 1981, Ser. No. 321,164

Claims priority, application United Kingdom, Mar. 25, 1980, 8010010

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.17 **13 Claims**



1. A portable medical nebulising apparatus capable of being accommodated in a pocket or handbag and comprising a housing defining a chamber having first and second end walls bound by a generally circular peripheral side wall defining a generally circular cross-section, said chamber forming a reservoir for material to be nebulised, air inlet means in one of said end walls of the housing and communicating with the interior of the chamber, a rotatable shaft extending through one of said end walls generally perpendicular to the cross-section of said chamber and extending into said chamber, nebulising means in the form of a disc mounted on said shaft, electrical drive means connected to said shaft to rotate said disc in a path passing at least in part through the reservoir to pick up material in the reservoir and fling particles of the material from the disc, said generally circular peripheral side wall extending around the periphery of the disc, an outlet port in said generally circular peripheral side wall, an outlet passage in communication with said outlet port extending from the peripheral side wall of the chamber outwardly away from the chamber for conveying nebulised particles, a mouthpiece in communication with said outlet passage, the axial dimension of the chamber being narrow relative to the radial dimension, said rotating disc producing an air stream which entrains the nebulised particles picked up by the disc, said air stream being flung outwardly of said outlet port through said outlet passage to said mouthpiece and baffle means provided between said outlet port and said mouthpiece to restrict the passage of particles above a selected predetermined size and to assist the return of larger particles to the chamber, so as to control the size of particles delivered to the mouthpiece by said air stream.

4,452,240

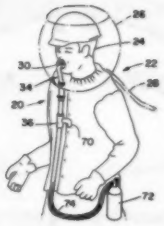
RESPIRATORY PROTECTION APPARATUS

Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Bridgeway, Calif.

Filed Oct. 5, 1981, Ser. No. 309,207

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—201.18 **9 Claims**



1. In combination with a primary respiratory system including a head enclosure and means adapted for supplying air to said head enclosure, an emergency egress respiratory protection apparatus at least partially extending into said head enclosure through an aperture therein, said emergency egress respiratory protection apparatus comprising:

a nose-engaging means for urging the outer walls of a nose toward the inner wall thereof, which means includes spaced apart urging members;

a mouthpiece, said nose-engaging means rigidly secured to said mouthpiece;

conduit means for supplying air to said mouthpiece, said conduit means including a rigid inner conduit rigidly secured in communication with said mouthpiece so that said conduit means can be used to direct said nose-engaging means onto the nose;

a collapsible outer conduit surrounding said rigid inner conduit having one end sealed about said aperture through said head enclosure of said primary respiratory system with the other end thereof sealingly secured to said rigid inner conduit distally from said mouthpiece, said collapsible outer conduit being collapsed as the rigid inner conduit urges the nose-engaging means onto the nose;

valve means communicating with said conduit means for allowing inhalation and exhalation of air, said valve means adapted to be connected to a source of air.

4,452,241

PLURAL STATION RESUSCITATOR

Stanley J. Sarnoff; William R. Tarello, both of Bethesda; Claudio Lopez, Silver Spring, all of Md., and Rudolph S. Malooley, Annandale, Va., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Jun. 1, 1982, Ser. No. 383,962

Int. Cl.³ A62B *7/04*

U.S. Cl. 128—204.18 **21 Claims**

1. Apparatus for resuscitating a plurality of patients comprising

a plurality of face mask assemblies each of which is operable to be operatively connected with a patient so as to permit fresh air to be supplied to the lungs of such patient,

means for delivering successive volumes of fresh air under pressure to each of said face mask assemblies at a desired cyclical frequency wherein each cycle includes said fresh air delivery as a minor part thereof,

stale air exhaust valve means for permitting air expelled from the lungs of each patient during the remaining major part of each cycle associated therewith to be exhausted to atmosphere through the associated face mask assembly,

means operatively associated with each face mask assembly for selectively supplying a respiratory medicament dosage

into the fresh air delivered to each face mask assembly, and

means operatively associated with each face mask assembly for indicating a minor part of each cycle associated therewith during which fresh air is delivered thereto so that the associates selective medicament delivering means is selected to deliver medicament only during the minor cycle part when said fresh air is delivered,

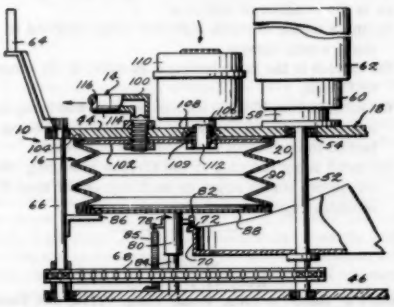
said fresh air delivering means comprising a frame,

a plurality of expandable and retractable positive displacement air chamber assemblies carried by said frame,

cam track means movably carried by said frame,

means for operatively connecting said cam track means with each of said air chamber assemblies so that each air chamber assembly is moved during the movement thereof through repetitive cycles each of which includes an expanded movement and a retracted movement during a time period of less than one-half of the time period of the entire cycle,

fresh air inlet check valve means for controlling the flow of



fresh air into each air chamber assembly during each expanded movement thereof,

means for conducting fresh air from each of said air chamber assemblies to an associated face mask assembly during each retracted movement of the associated air chamber assembly and for preventing air flow therebetween in the opposite direction,

means for moving said cam track means so that each of said air chamber assemblies is moved through repetitive cycles each of which includes (1) an expanded movement to cause fresh air to flow therein past the associated fresh air inlet check valve means and (2) a retracted movement during the aforesaid less than one-half cycle time period to cause fresh air therein to flow therefrom through the associated face mask assembly into the lungs of a patient operatively connected therewith so as to be expellable from the lungs of the patient through the associated face mask assembly and past the associated stale air exhaust valve means during the greater than one-half cycle time period when the associated air chamber assembly is not being moved through a retracted movement.

4,452,242

RESPIRATOR FOR USE IN PRESSURE CHAMBERS

Fritz Bänziger, Gross Wesenberg, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,401

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126207

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.26 **9 Claims**

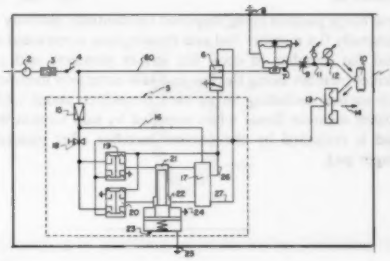
1. A respirator for use in a pressure chamber having a pressure, for supplying a respiration gas to a patient during a breathing cycle having an inhalation time and an exhalation time, comprising:

a respiration line disposed in the pressure chamber for connection to a patient;

a control valve in said respiration line for passing an inhalation gas flow to the patient and for blocking gas flow on the respiration line;

a time control unit connected to said respiration line and to said control valve for controlling respiration gas during the inhalation and the exhalation times of the breathing cycle;

said time control unit including a frequency stabilizer comprising a cylinder having a plurality of cylinder portions of different diameters and a step piston having a plurality of portions in sliding sealing engagement with respective ones of said cylinder portions, said step piston portions defining with said cylinder portion said plurality of volumes, a first one of said volumes communicating with said pressure chamber for exposing a first one of said piston



portions to the pressure of said pressure chamber, a second one of said volumes communicating with an exterior of said pressure chamber for exposing a second one of said piston portions to a pressure outside said pressure chamber, biasing means connected to said frequency stabilizer for biasing said piston in a selected direction in said cylinder for balancing a pressure outside said pressure chamber with the pressure inside said pressure chamber by displacement of said piston, a third and a fourth one of said volumes having a volume ratio corresponding to the ratio between said inhalation time and said exhalation time;

said time control unit further including control means connected between said third and fourth volumes, and said control valve for operating said control valve to pass an inhalation gas flow during the inhalation time and to block the gas flow during the exhalation time; and

an exhalation valve for connection to the patient, connected to said control means for establishing an exhalation gas flow during the exhalation time.

4,452,243

SANITARY BLOOD LANCET DEVICE

Norbert Leopoldi, Chicago, and William P. Heinrich, McHenry, both of Ill., assignors to Cloverline, Inc., Chicago, Ill.

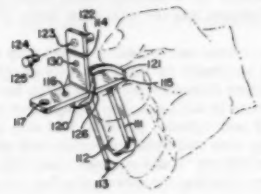
Continuation-in-part of Ser. No. 284,603, Jul. 20, 1981, abandoned. This application Mar. 3, 1982, Ser. No. 354,374

Int. Cl.³ A61B *17/34*

U.S. Cl. 128—314 **3 Claims**

1. A flesh puncturing device for creating a wound from which blood can be drawn for testing, said device having a pivoted striker member including a puncturing instrument, and a finger hold member supporting the striker member, said striker and finger hold members including an integral hinge portion connecting the two parts for hinging of the striker on the finger hold member, said finger hold member having a generally flat member and an extension generally parallelling said striker member, a tension member operatively engaging said striker member and said extension and placed under in-

creased tension when the striker moves away from the extension, said striker having an acutely angled thumb piece disposed closely adjacent to said hinge portion for moving the striker away from the extension to cock the striker, said finger hold member includes a finger hold located beneath said flat portion, said finger hole having an integral lower finger portion by means of which the device is held by a user, said integral hinge portion being disposed substantially midway of said generally flat member and said thumb piece is retracted toward said flat member to cock the striker member, said pivoted striker member being flexible and said extension member has a top surface including an upward projection about which the striker member flexes when impelled by said tension member and is retracted by the tension member after puncturing a finger pad.

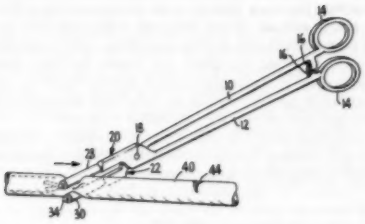


4,452,244

ENDARTERECTOMY ROLLER

Albert K. Chin, San Francisco, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jan. 24, 1980, Ser. No. 114,981
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—321 **2 Claims**



1. An endarterectomy roller comprising a pair of jaw members interconnected for relative pivotal movement toward and away from each other and comprising pintle members carried thereby, elongated flexible and disposable plastic sleeve members freely fitted over said pintle members and adapted to be substantially freely rotatable thereon, and means interconnecting said sleeve members and pintle members enabling a quick connection and disconnection therebetween by the expedient of, respectively, simply axially pulling said sleeve members off of said pintle members and simply axially pushing said sleeve members onto said pintle members, said means comprising flexible annular tongue means extending from one pair of the pairs of sleeve and pintle members and complemental annular grooves formed in the other pair thereof and adapted to be snap-fittingly engaged and disengaged with respect to said tongue means.

4,452,245

SURGICAL MESH AND METHOD

Francis C. Usher, 2219 Richmond Ave., Houston, Tex. 77098

Division of Ser. No. 157,146, Jun. 6, 1980, Pat. No. 4,347,847.
This application Jun. 23, 1982, Ser. No. 391,323
Int. Cl.³ A61B *17/04*
U.S. Cl. 128—334 R **3 Claims**

1. A surgical mesh of monofilament threads free of water-leachable irritant impurities and being physiologically inert even in the presence of infection,

having a tensile strength sufficient when doubled to withstand wound tension,

the threads in the mesh having a diameter in the range of 5 to 15 mils,

the mesh having 10 to 20 stitches per inch and being knitted in a continuous tubular shape with the threads being unattached to each other at their points of crossing,

the mesh being flattened in use thereby providing continuous suture border edges on each side of the mesh free of selvedge edges.

4,452,246

SURGICAL INSTRUMENT

Robert F. Bader, 8 Elfin, Iloine, Calif. 92714, and Dennis P. Kerkoff, 12752 Melody Dr., Garden Grove, Calif. 92641

Filed Sep. 21, 1981, Ser. No. 304,210
Int. Cl.³ A61B *17/06*
U.S. Cl. 128—340 **2 Claims**

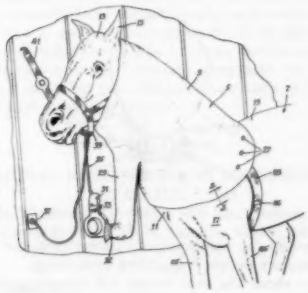
1. A surgical instrument including a pair of crossed arms pivotally coupled to one another at a pivot point, said arms forming jaws at one end of the instrument for holding a needle, first means coupled to the arms for releasably latching the jaws to cause the jaws to grip the needle, a third arm pivotally coupled to the crossed arms and having a cutting blade at said one end of said instrument, second means coupled to said third arm and to one of said crossed arms for releasably latching said third arm in a co-extensive position adjacent to one of said crossed arms, said one of said crossed arms having a cutting blade formed opposite said jaw at said one end of said one crossed arm to engage the cutting blade of said third arm in a scissors action when said third arm is operated for cutting suture thread independently of said crossed arms when said jaws are latched by said first means.

4,452,247

HEAT TREATMENT METHOD AND APPARATUS FOR HORSES

Dalton Hebert, 3347 SW. 7th St., Ocala, Fla. 32671

Filed Aug. 31, 1981, Ser. No. 298,001
Int. Cl.³ A61F 7/00
U.S. Cl. 128—402 5 Claims



1. A treatment device for shaping the neck of a horse comprising, in combination, a flexible impermeable sleeve formed from a double-walled sheet proportioned to loosely surround the neck of a horse, said sleeve having an upper end which closely fits the upper neck adjacent the ears and lower jaw and having a lower end which closely fits the lower neck adjacent the shoulders and back, said sleeve being generally frusto-conical in shape, said sheet providing a space between the walls thereof, strap means extending downwardly from the lower end of the sleeve for securing said lower end in position adjacent the shoulders and back, hot air blowing means, and means for conducting hot air from the blowing means into said space between the walls of the sheets to transfer heat to the neck of the horse, one wall of said sheet being provided with vent openings spaced from the heat conducting means.

4,452,248

BIDIRECTIONAL PACEMAKER

J. Walter Keller, Jr., 8600 SW. 54th Ave., Miami, Fla. 33143

Filed Oct. 13, 1981, Ser. No. 310,751
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 13 Claims

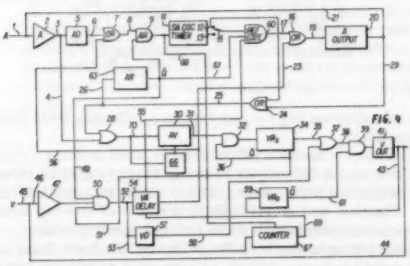


FIG. 9

10. A dual sequence cardiac pacemaker for providing a atrial-ventricular stimuli pair and assuring AV sequential stimulation for all combinations of cardiac and interference signals detected on the dual electrode system comprising:

pacer escape rate determining means;

atrial stimulation means responsive to the output of said escape rate for supplying a stimulation signal to the atria;

atrial sensing means and ventricular sensing means for detecting atrial-ventricular events;

ventricular output means for supplying a stimulation signal to said ventricle;

first control means responsive to said atrial and ventricular sensing means and said atrial and ventricular stimulation signals for controlling said escape rate determining means;

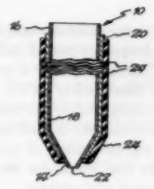
second control means responsive to said atrial and ventricular sensing means and said atrial and ventricular stimulation signals to control the output of said atrial-ventricular stimulation means in a predetermined sequence in both the atrial-ventricular and ventricular-atrial direction.

4,452,249

MICROELECTRODES AND PROCESS FOR SHIELDING SAME

Frederick Sachs, Buffalo, and Richard G. McGarrigle, Eggertsville, both of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Dec. 1, 1981, Ser. No. 326,388
Int. Cl.³ A61B 5/04
U.S. Cl. 128—642 11 Claims



1. A method of shielding microelectrodes, including the steps of:

coating the exterior surface of a microelectrode having a central throughopening by vacuum evaporation techniques to provide a thin layer of conductive material thereabout; and

removing a controlled layer of conductive material from a circumferential tip area of said microelectrode leaving a tip region thereof exposed.

8. A shielded microelectrode, comprising:

a microelectrode body having a throughopening extending from a shank end of said body to the operative tip end thereof;

a thin layer of conductive material applied to said microelectrode body by vacuum evaporation, said conductive material adhering in surrounding relation to the exterior of said body short of the tip thereof to thereby leave an exposed exterior tip portion of no greater than substantially 20 micrometers, and

a layer of insulating material covering said conductive material and a portion of said exposed tip.

4,452,250

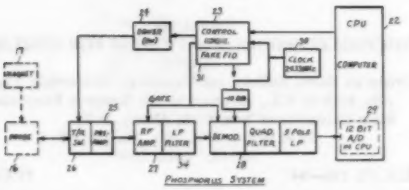
NMR SYSTEM FOR THE NON-INVASIVE STUDY OF PHOSPHORUS METABILISM

Britton Chance; John S. Leigh, and Scott M. Eleff, all of Johnson Research Foundation, School of Medicine University of Pennsylvania, Philadelphia, Pa. 19104

Filed Apr. 29, 1982, Ser. No. 373,283
Int. Cl.³ A61B 5/05
U.S. Cl. 128—653 14 Claims

1. An analytic apparatus for obtaining metabolism information from a living body member comprising a hollow electromagnet having an inner space for receiving the body member, said space having means providing a substantially uniform high-intensity magnetic field and containing a probe coil with which the body member is engageable when received in said space, means generating a radio-frequency signal with a carrier frequency corresponding to the nuclear magnetic resonance frequency of a metabolite in the tissue of the body member,

means to repetitively apply short pulses of said radio-frequency signal to said probe coil, whereby to excite nuclear resonance responses of the metabolite, radio frequency demodulation means tuned substantially to said resonance responses, control logic means controlling the application of said radio-frequency signal pulses to said probe coil, circuit means connecting the probe coil to the demodulation means and including switch means, said switch means having transistor controlled means to greatly increase the impedance between the



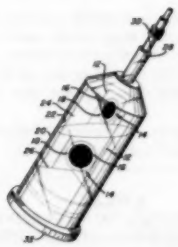
probe coil and the demodulation means responsive to application of said radio-frequency signal pulses, means to substantially remove said impedance after a predetermined period of application of said short pulses to the probe coil, and signal conversion means connected to the output of said demodulation means for converting the output signals of the demodulation means into a representation of the intensities versus frequency shift of the free induction decays of the respective metabolite components of the tissue.

4,452,251

SYRINGE CONTENT INDICATING DEVICE

Marlin S. Heilman, Gibsonia, Pa., assignor to Medrad, Inc., Pittsburgh, Pa.

Filed Nov. 5, 1982, Ser. No. 439,576
Int. Cl.³ A61B 6/00
U.S. Cl. 128—655 **8 Claims**



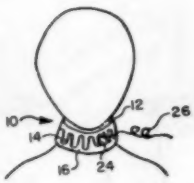
1. In an angiographic syringe having a transparent, hollow cylindrical barrel for receiving a transparent liquid, and a plunger axially reciprocable within the barrel for discharging the liquid therefrom, the improvement comprising indicating means carried by said barrel to indicate the presence of a transparent liquid within said barrel, said indicating means including a plurality of discrete, opaque patterns of predetermined shape substantially axially disposed along said barrel, whereby the liquid alters the perceived configuration of said patterns when viewed through said barrel to provide a direct visual indication of the presence of a transparent liquid within said barrel.

4,452,252

NON-INVASIVE METHOD FOR MONITORING CARDIOPULMONARY PARAMETERS

Marvin A. Sackner, Miami Beach, Fla., assignor to Respitrace Corporation, Ardsley, N.Y.

Filed May 26, 1981, Ser. No. 266,850
Int. Cl.³ A61B 5/02, 5/08
U.S. Cl. 128—671 **26 Claims**



1. A method for non-invasively monitoring one or more cardiopulmonary events in a subject comprising:

disposing about the neck means for detecting changes in cross-sectional area or a parameter indicative thereof;

providing a signal indicative of the changes in cross-sectional area or a parameter indicative thereof as detected by said detecting means; and

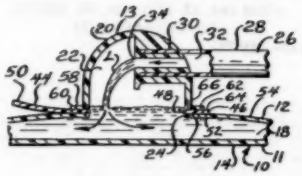
monitoring said signal, said signal being indicative of said cardiopulmonary events.

4,452,253

COLLECTION BAG

James J. Peterson, Elgin, and Glenn N. Taylor, Cary, both of Ill., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 137,225, Apr. 4, 1980, Pat. No. 4,313,447, which is a continuation-in-part of Ser. No. 004,972, Jan. 22, 1979, abandoned, which is a continuation of Ser. No. 791,658, Apr. 28, 1977, abandoned. This application Oct. 26, 1981, Ser. No. 314,932
Int. Cl.³ A61F 5/44
U.S. Cl. 128—766 **1 Claim**



1. A collection bag for receiving anc collecting body fluids, comprising:

a receptacle having a pair of opposed walls defining a chamber, means defining an opening through only one of said walls, the wall opening means communicating with the chamber, and means defining a region of bonding which extends peripherally about the wall opening means;

a connector having a cavity to receive the body fluids and opening means defined through said connector having dimensions substantially the same as those of said wall opening means, there being a peripheral flange extending outwardly from said connector opening means to define a base having a lower planar surface with an inner circumference substantially the same as that of said wall opening means region of bonding;

a rupture member in the form of a ring having a lower surface and an outer, upper surface, said ring having an inner circumference substantially the same as those of said

wall and connector opening means, bonding means for affixing said ring lower surface to said wall opening means region of bonding with sufficient strength to prevent reattachment to the one wall opening means region of bonding after being ruptured therefrom, additional bonding means for affixing said ring outer upper surface to said connector upper flange, said ring and connector remaining in assembly subsequent to rupturing of said rupture member from said receptacle one wall, and a tab extending outwardly from the ring and graspable by the fingers of a user to move said tab upwardly from said receptacle one wall, thus to rupture said rupture member and connector unitary assembly from said receptacle one wall; and

a conduit extending from the connector and communication with said connector cavity.

4,452,254

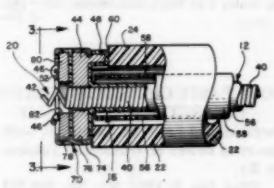
CARDIAC ELECTRODE AND METHOD FOR INSTALLING SAME

Edward M. Goldberg, 225 Maple Hill Rd., Glencoe, Ill. 60022, and Seymour Bazell, 9235 N. Latrobe, Skokie, Ill. 60077

Filed Jul. 13, 1981, Ser. No. 282,750

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—785 **38 Claims**



3. A method for attaching an electrical lead to a heart comprising the following steps:

providing a cardiac lead assembly which comprises an elongated cardiac lead, with an exposed electrically conductive electrode tip, projecting axially from one end of the cardiac lead, to serve as an attachment end, a biasing member coupled to the electrode tip, and a lead insertion device for holding the cardiac lead;

selectively moving the biasing member with respect to the insertion device into a biased position, thereby storing potential energy in the biasing member;

pointing the electrode tip at a selected portion of the heart, but spaced from said selected heart portion; and

releasing the biasing member from the biased position to allow the biasing member to accelerate the electrode tip as a projectile, toward the heart and away from the insertion device, and so as to provide the electrode tip with a momentum sufficient to cause the electrode tip to penetrate a surface of the heart, thereby embedding the electrode tip in the heart.

4,452,255

APPARATUS FOR TRANSPORTING AND CLASSIFYING DISCRETE ARTICLES OF THE TOBACCO PROCESSING INDUSTRY

Peter Brand, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

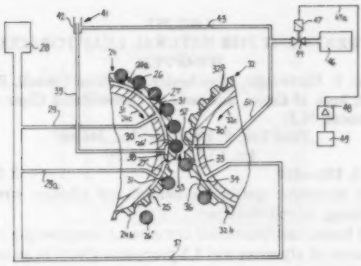
Filed Apr. 20, 1982, Ser. No. 370,169

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1981, 3116545

Int. Cl.³ A24C *5/35, 5/58*

U.S. Cl. 131—282 **18 Claims**

1. Apparatus for transporting a series of discrete articles, particularly a layer of articles of the tobacco processing industry, comprising a first conveyor having a first article supporting component movable along a first endless path and provided with first suction ports for retention of articles thereon; first suction generating means communicating with the ports in a first portion of said path; second suction generating means communicating with the ports in a second portion of said path; regulating means for activating and deactivating said second suction generating means so that the articles entering said



second portion of said path are attracted to said component in activated condition of said second suction generating means; and a second conveyor including a second article supporting component movable along a second endless path having a portion adjacent to the second portion of said first path, said second component having second suction ports for retention of articles thereon.

4,452,256

METHOD AND APPARATUS FOR CONDITIONING TOBACCO

Waldemar Wochnowski, and Reinhard Hohm, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

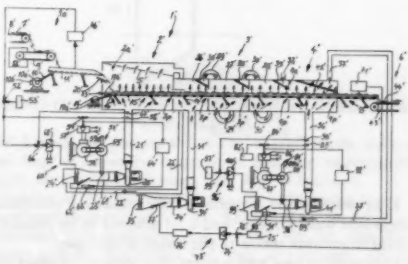
Division of Ser. No. 037,995, May 9, 1979, Pat. No. 4,346,524, which is a continuation-in-part of Ser. No. 922,575, Jul. 6, 1978, Pat. No. 4,241,515, which is a continuation of Ser. No. 448,949, Mar. 7, 1974, Pat. No. 4,143,471, which is a continuation-in-part of Ser. No. 220,599, Jan. 25, 1972, Pat. No. 3,799,176. This application Nov. 23, 1981, Ser. No. 324,127

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1971, 2103671; Jun. 29, 1971, 2132226; Jul. 14, 1973, 2335970

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—303 **12 Claims**



1. A method of conditioning tobacco, comprising the steps of transporting a continuous stream of tobacco particles at a constant rate and in a predetermined direction along a predetermined path; measuring the initial moisture content of successive increments of the stream in a first portion of said path; increasing the moisture content of the particles in a second portion of said path downstream of said first portion, as considered in said direction, when the measured initial moisture

content is below a predetermined value; and drying the particles of said stream in a third portion of said path downstream of said second portion.

4,452,257

TREATMENT FOR NATURAL LEAF TOBACCO WRAPPER

William F. Cartwright, Manchester, and Alan Cornell, Bloomfield, both of Conn., assignors to Consolidated Cigar Corp., Secaucus, N.J.

Filed Feb. 8, 1982, Ser. No. 346,407
Int. Cl.³ A24B *15/30*
U.S. Cl. 131—310 8 Claims

1. A treatment system for natural leaf tobacco wrappers comprising, in combination:

(a) a humectant/plasticizer component comprising a combination of glycerine and 1,3-propylene glycol in an amount between about 10% and about 20% based upon the weight of the natural leaf tobacco wrapper;

(b) a preservative component selected from the group consisting of sorbic acid, parabens, propionates, benzoates and sorbates and in an amount between about 0.1% and about 0.6% by weight based on the weight of the natural leaf wrapper;

(c) a water/alcohol mixture solvent carrier comprising water and an alcohol selected from the group consisting of methanol, ethanol, propanol and isopropanol; and

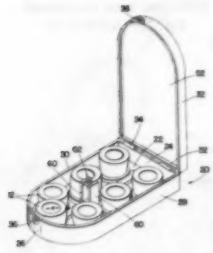
(d) a collagen-type film-forming component.

4,452,258

CONTAINER FOR PIPES

Walter J. Manns, 20663 Beachcliff Blvd., Rocky River, Ohio 44116

Filed May 17, 1982, Ser. No. 378,671
Int. Cl.³ A24F *9/14, 9/16*
U.S. Cl. 131—329 13 Claims



1. In combination, a portable case consisting of a bottom, raised side wall portions, and a lid adapted to be opened and closed to provide access to the inside of the case,

a plurality of pipe bowls containing tobacco or other smoking material,

said pipe bowls having an opening in the uppermost and lowermost end thereof,

the bottom of the case comprising spaced pipe bowl holding means in which the bottom of the pipe bowls are seated and whereby the opening therein is closed,

the lid of the case having means adapted to close the opening in the uppermost end of the bowl.

4,452,259

SMOKING ARTICLES HAVING A REDUCED FREE BURN TIME

Vello Norman, Raleigh, and Arthur M. Ihrig, Greensboro, both of N.C., assignors to Loews Theatres, Inc., New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,052
Int. Cl.³ A34D *1/02, 1/16*
U.S. Cl. 131—349 13 Claims

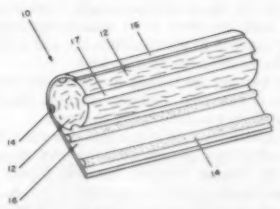
1. In a smoking article having a reduced free burn time comprising tobacco wrapped in paper having at least one circumferential band printed between the ends of the smoking article, the band containing a substance which will cause the smoking article to extinguish if it is not puffed, the improvement which comprises an air permeable band about 2–10 mm wide which will not interfere with smoking if the article is puffed normally, said band containing a substance which is a liquid in the temperature range of about 100° C. to 200° C. and which, as the burning cone comes in contact with it, provides a fluid film on the paper, without substantially penetrating into the paper, which film once formed substantially restricts the flow of air to the burning cone and distills and/or decomposes endothermically from about 140° C. to 300° C. to yield gaseous decomposition products normally present in the smoke of smoking articles not having the band, the amount of said substance being effective to extinguish the smoking article within 2–5 minutes, under free burn conditions, after the cone reaches the banded area.

4,452,260

TOBACCO PASTE CIGARETTE ADDITIVE AND CIGARETTE HAVING SAME

Harry S. Porenski, and Leroy R. Sachleben, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 5, 1982, Ser. No. 365,701
Int. Cl.³ A24B *3/18;* A24C *5/14;* A24D *1/00*
U.S. Cl. 131—364 14 Claims



1. A cigarette comprising:

a generally cylindrical rod of tobacco including;

at least one line of expanded tobacco paste extending substantially longitudinally of said tobacco rod; and,

a wrapper material circumferentially surrounding said tobacco rod and said at least one line of expanded tobacco paste.

4,452,261

HAIR SETTING COMPOSITION AND METHOD

Ann F. Bresak, and Eva Tolgyesi, both of Rockville, Md., assignors to The Gillette Company, Boston, Mass.

Filed Jan. 29, 1982, Ser. No. 344,090
Int. Cl.³ A45D *19/00;* A61K *7/11*
U.S. Cl. 132—7 5 Claims

1. A composition for setting hair comprising an aqueous dispersion containing a hydrated dialdehyde polysaccharide having a molecular weight of from about 10,000 to about 50,000 and a hydroxyaromatic compound selected from the group consisting of reactive derivatives of benzene or naphthalene having hydroxy groups which are meta(1,3) to each other,

the ratio by weight of said dialdehyde polysaccharide and said hydroxyaromatic compound being from about 1:0.75 to about 1:2.0, the quantity of said aldehyde polysaccharide and said hydroxyaromatic compound being about 2 to about 8% by weight of the total composition.

5. A method for setting hair comprising application of a composition as described in claim 1 followed by heating the hair to a temperature of 40°-150° C. for at least 10 seconds, until a condensation reaction between said dialdehyde polysaccharide and said hydroxyaromatic compound takes place.

4,452,262

METHOD OF APPLYING COSMETICS AND MEDIUM AND DEVICE FOR PERFORMING THE METHOD

Axel Jankewitz, Fürth-Oberfürberg, Fed. Rep. of Germany, assignor to A. W. Faber-Castell, Nürnberg, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,045
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **5 Claims**

1. A device for wetting skin with a solving medium before or after application of a pin-shaped coloring cosmetic substance, the device comprising

a container;

a tampon soaked with a solving medium and accommodated in said container;

a wick arranged in a liquid-conducting communication with said tampon and extending outwardly beyond said container;

a sealingly closing cover movable between an open position in which it is removed from said container for use of the device and a closed position in which it closes said container for non-use of the device; and

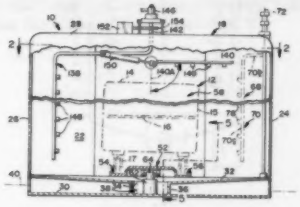
a suction pad detachably arranged on said cover and movable together therewith between said positions so that in said closed position when said suction pad contacts said wick the solving medium flows from said wick into said suction pad under the action of suction and flushes particles of cosmetic substance adhered to said wick whereby said wick is cleansed, and then when said cover is moved from said closed position to said open position said suction pad is removed from said container together into said cover.

4,452,263

CART WASHING AND SANITIZING APPARATUS

Delmar H. McClure, Portland, Oreg., assignor to McClure Plastics Company Incorporated, Portland, Oreg.

Filed Jun. 28, 1982, Ser. No. 393,093
Int. Cl.³ B08B *3/02, 9/08;* B60S *3/04*
U.S. Cl. 134—45 **8 Claims**



1. Apparatus for washing a delivery cart of the type having an open side, said apparatus comprising

a chamber adapted to receive the cart at a washing station defined within the chamber,

first nozzle means mounted within said chamber comprising an elongate upright spray boom disposed adjacent a side of the chamber and having nozzle structure operable to direct spray water to one side of the boom and inward in the chamber, said spray boom being mounted for oscillatory movement by back and forth rotation of the boom about an upright axis to provide by such movement a generally fan-shaped discharge of spray water directed by said nozzle structure inward in the chamber,

means for supplying pressurized wash water to said first nozzle means,

first drive means mounted on said chamber connected to said first nozzle means for producing said oscillatory movement whereby said spray water is directed against inner cart surfaces to be washed, with the cart positioned at said station,

second nozzle means mounted within said chamber for movement in a path substantially encircling a cart at said station,

means for supplying pressurized water to said second nozzle means, and

second drive means mounted on said chamber connected to said second nozzle means for producing therein cart-encircling movement.

4,452,264

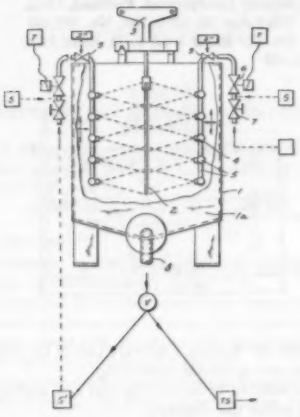
RINSING OF ARTICLES TO REMOVE AN ADHERING SUBSTANCE

Rudolf Kreisel, Nuremberg, and Walter Meyer, Berlin, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 304,971, Sep. 23, 1981, which is a continuation-in-part of Ser. No. 829,255, Aug. 30, 1977, abandoned. This application Aug. 4, 1982, Ser. No. 405,093
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1976, 2640932
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—58 R **8 Claims**

1. Apparatus for rinsing articles to remove an adhering substance, particularly subsequent to chemical or electrochemical surface treatment of the articles, comprising means bounding a rinsing chamber; means for supporting at least one article in said chamber; a plurality of spray nozzles arranged to direct sprays of a rinsing agent against the article in said chamber; and

means for operating said spray nozzles intermittently and for deactivating them after each operation for a time interval



whose duration is at least substantially equal to or greater than the duration of the preceding spray operation.

4,452,265

METHOD AND APPARATUS FOR MIXING LIQUIDS

Arne Lönnebring, Vagnvägen 6, S-125 33 Älvsjö, Sweden

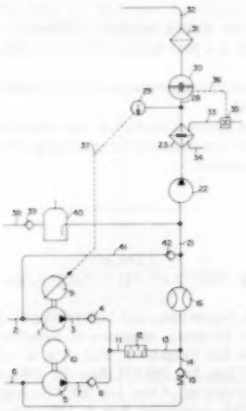
PCT No. PCT/SE80/00346, 371 Date Aug. 20, 1981, 102(e) Date Aug. 20, 1981, PCT Pub. No. WO81/01803, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 22, 1980, Ser. No. 296,425

Claims priority, application Sweden, Dec. 27, 1979, 7910673-8

Int. Cl.³ G05D *11/16*

U.S. Cl. 137—4 **5 Claims**



1. A method of mixing liquids with different viscosities while retaining substantially constant viscosity at a given temperature of the liquid mixture, characterized in that the mixture is heated, in that its temperature and viscosity after heating are measured, in that heating is regulated with guidance from the thus-determined viscosity, so that a substantially constant viscosity value after heating is maintained, and in that the mixing ratio between both liquids is regulated with guidance from the measured temperature, so that a substantially constant temperature of the liquid mixture is maintained after heating.

4,452,266

AIR ASPIRATION DEVICE OF AIRCRAFT-MOUNTED GAS-TURBINE ENGINE

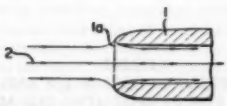
Saburo Ogino, Utsunomiya; Yoshitomo Taniguchi, Kagamihara, and Satoshi Kiyoshima, Utsunomiya, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 319,022

Claims priority, application Japan, Nov. 15, 1980, 55-161089

Int. Cl.³ B64D *27/20*

U.S. Cl. 137—15.1 **23 Claims**



1. An air aspiration device of an aircraft-mounted gas-turbine engine comprising an airfoil structure having a substantially triangular shape in plan view and disposed relative to a substantially horizontal position of the aircraft forward of and below the air intake duct of the engine, and at least one small airfoil member disposed relative to the substantially horizontal position of the aircraft below the airfoil structure, an inductive action of leading-edge separation vortices generated from the leading edges of the airfoil structure and small airfoil member being utilized to aerodynamically curve the direction of air flowing into the air intake duct and thereby to prevent turbulence in the intake air flow and resulting defective operation or failure of the engine during flight of the aircraft at large angles of attack.

4,452,267

PRESSURE REGULATING VALVE

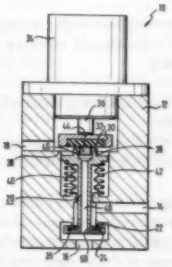
Helmut Ott, Stuttgart, and Helmut Motzer, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Herion-Werke KG, Fellbach, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,299

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1980, 3038797

Int. Cl.³ G05D *16/06*

U.S. Cl. 137—116.5 **7 Claims**



1. A pressure regulating valve for pneumatic and hydrualic fluid comprising a valve housing having a primary fluid connection, a secondary fluid connection and a fluid relief connection; first valve means in said housing between said primary fluid connection and said secondary fluid connection; second valve means between said secondary fluid connection and said fluid relief connection, said valve means being constructed as seat valves each comprising a valve seat and a valve disk

provided with soft sealing means and movable in closing direction toward and in opening direction away from the respective valve seat; and a piston slidingly guided in said housing coaxial with said secondary fluid connection and having a coaxial extension of smaller diameter than said piston and projecting from the latter toward said secondary fluid connection, said piston and said extension being formed with a bore therethrough, the valve seat of said first valve member being formed by said housing about one end of said tubular extension and the valve seat of said second valve means being provided in said piston and communicating with said bore, said valve disk of said first valve means being connected to said one end of said extension, said valve disk of said second valve means being provided with a damping piston extending with clearance into said bore.

4,452,268

CLEANING APPARATUS FOR MILK CONVEYING PATHS IN ANIMAL MILKING MACHINES

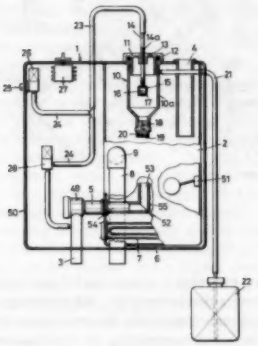
Friedrich Icking, Oelde, and Heinrich Bücker, Langenberg, both of Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Mar. 1, 1977, Ser. No. 773,174

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 26085858

Int. Cl.³ B08B *3/04*; F16K *21/16, 21/20*

U.S. Cl. 137—240 **25 Claims**



1. In an animal milking machine wherein a vacuum line is connected with means for generating vacuum therein, apparatus for admitting into said line a flowable cleaning agent comprising a reservoir having an upper portion and a lower portion communicatively connected to said line; a metering device having a vessel extending into said upper portion and including an upper part and a lower part; a source of dilutant; valved conduit means connecting said source and said line with the upper part of said vessel; a source of cleaning agent connected with said vessel so that cleaning agent flows into said vessel in response to evacuation of air from said vessel by way of said conduit means; a first valve provided within said conduit means in said vessel and operative to seal said conduit means from said vessel when the supply of cleaning agent in said vessel rises to a predetermined level which increases the pressure head of the cleaning agent in said vessel; said pressure head being a function of the positioning of said conduit means; flow restrictor means provided in said vessel to admit atmospheric air and to thus raise the pressure in said vessel subsequent to sealing of said conduit means from said vessel; and a second valve provided in said vessel and operative to permit said supply of cleaning agent to flow into said reservoir and thence into said line when the sum of the pressures in the interior of said vessel reaches a predetermined value which is greater than the pressure in said reservoir.

4,452,269

ELECTROHYDRAULIC ACTUATING DRIVE FOR VALVES

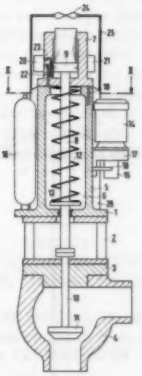
Wolfgang Kindermann, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,911

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 8121663[U]

Int. Cl.³ F16K *31/122*

U.S. Cl. 137—338 **12 Claims**



1. An electrohydraulic actuating drive for a valve that includes a valve housing and valve member received in the valve housing for movement along an axis in and opposite to a closing direction, comprising a compact drive block mounted on the valve housing and including a support structure that includes a storage receptacle for a low-pressure hydraulic fluid, including a carrying circumferential wall; a hydraulic actuating cylinder-and-piston unit including a cylinder mounted on said storage receptacle remotely from the valve housing and a piston rod extending through the storage receptacle concentrically to said circumferential wall and connected to the valve member; a force storage spring arranged in said storage receptacle and urging the valve member in the closing direction; and means for operating said hydraulic actuating unit mounted on said support structure and including an electro-hydraulic transducer, a hydraulic pump accommodated in said storage receptacle and having a low-pressure side connected to said storage receptacle and high-pressure side, an electric motor connected to said hydraulic pump for driving the same, and at least one

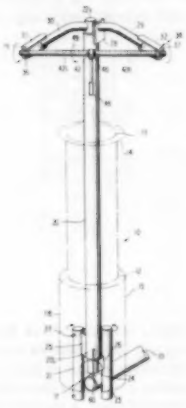
hydraulic pressure storage connected to said high-pressure side of said hydraulic pump and to said hydraulic actuating unit and at least partially accommodated in said storage receptacle.

4,452,270
Patent Not Issued For This Number

4,452,271
PLASTIC PIPE SQUEEZING DEVICE AND VALVE BOX FOR USE THEREWITH

Harry Gatch, Summerville, S.C., assignor to Handley Industries, Inc., Jackson, Mich.

Filed Sep. 14, 1981, Ser. No. 301,708
Int. Cl.³ F16L *5/00*
U.S. Cl. 137—369 **10 Claims**

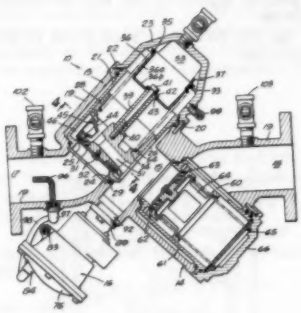


1. A squeeze tool for hollow plastic pipe comprising,
a hollow circular first shaft,
a second shaft coaxial with said hollow circular first shaft and mounted for rotation within said first shaft,
a pair of plastic pipe engaging members, the respective axes each of said plastic pipe engaging members being parallel to each other and the common axis of said coaxial shafts,
means joining one of said pair of pipe engaging members to said first shaft,
means joining the other of said pipe engaging members to said second shaft so that the axis of said pair of pipe engaging members are at equal radii from the common axis of said coaxial shafts,
and drive means at the opposite ends, respectively, of said shafts for relatively rotating same so that one of said pipe engaging members rotate on an arc towards the other of said pipe engaging members to squeeze the interior walls of said hollow plastic pipe together.

4,452,272
CHECK VALVE

David E. Griswold, Corona Del Mar, Calif., assignor to Griswold Controls, Irvine, Calif.

Division of Ser. No. 121,156, Feb. 13, 1980, Pat. No. 4,276,897, which is a continuation of Ser. No. 918,646, Jun. 23, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 236,645
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—454.6 **3 Claims**

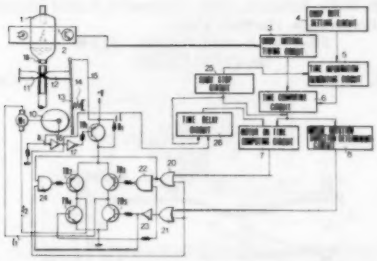


1. In backflow prevention apparatus for installation between a supply pipe and a discharge pipe, the apparatus including a differential check valve assembly for connection to the supply pipe, the improvement comprising, in combination: a stationary valve seat, a stationary barrel positioned coaxially of said valve seat, a valve poppet guided for movemnt in said barrel toward and away from said valve seat, a spring acting to move said valve poppet into sealing contact with said valve seat, means cooperating with said barrel and said valve poppet to define a chamber remote from said valve seat, an ejector nozzle on said valve poppet receiving fluid from said barrel when said valve poppet has separated from said valve seat, the outer surface of the valve poppet having pockets and ribs cooperating with said barrel to produce circumferential flow of fluid on the outer surface of said valve poppet away from said ejector nozzle and thereby acting to minimize axial flow from said valve seat along said valve poppet into said chamber, said ejector nozzle having a portion communicating with said chamber so that relatively rapid fluid flow from said ejector nozzle causes a reduction in fluid pressure in said chamber to oppose the action of said spring.

4,452,273
APPARATUS FOR CONTROLLING DROP-WISE FLOW OF FLUID MATERIAL

Yoshiki Hanzawa, and Takahiro Soma, both of Fujinomiya, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1982, Ser. No. 407,423
Claims priority, application Japan, Aug. 28, 1981, 56-134938
Int. Cl.³ F16K *31/40*
U.S. Cl. 137—486 **7 Claims**



1. An apparatus for controlling the drop-wise flow of a fluid in a medical set for transfusions and intravenous feeding having a drop chamber and a flexible tube communicating therewith, which apparatus comprises:

means embracing the drop chamber for converting the drop-rate condition into an electrical signal;

a stationary member provided at a portion of the flexible tube;

a movable member disposed to confront said stationary member through the intermediary of the flexibe tube and mechanically biased toward said stationary member to press the flexible tube;

adjusting means moving said movable member against the mechanical bias for adjusting the flow rate of the fluid through the flexible tube;

driving means for driving said adjusting means;

control signal generating means, having said adjusting means and said movable member, for generating a control signal in response to contact between said adjusting means and movable member when said driving means brings said adjusting member into contact with said movable member from the non-contacting state;

speed changeover means for changing over said driving means from a high-speed drive region to a low-speed drive region in response to said control signal;

drop-rate setting means for setting a drop rate; and

control means adapted to compare a signal produced by said drop-rate setting means and a signal produced by said converting means for moving said movable member, in the low-speed region, to a position relative to said stationary member which provides a drop rate equivalent to the set drop rate.

4,452,274
ROTARY VALVE FOR POWER STEERING SYSTEM

Kyosuke Haga, Anjo, and Tsuneo Tanaka, Okazaki, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 29, 1981, Ser. No. 268,380
Claims priority, application Japan, May 30, 1980, 55-73607
Int. Cl.³ F15B *9/10*
U.S. Cl. 137—625.22 **2 Claims**

1. A rotary valve for a power steering system, comprising:

an outer valve member;

an inner valve member rotatably carried in said outer valve member;

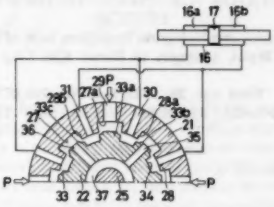
four supply ports formed in one of said outer and inner valve members at regular intervals;

four pairs of cylinder ports formed in one of said outer and inner valve members at regular intervals, each pair of said cylinder ports being disposed at both sides of a corresponding one of said four supply ports in a circumferential direction of said inner valve member;

at least four exhaust ports formed in one of said outer and inner valve members and each disposed between successive two of said cylinder ports;

eight axially extending slots formed on said inner periphery of said outer valve member at regular intervals for defining eight axially extending outer lands between said eight slots; and

eight axially extending slots formed on said outer periphery of said inner valve member at regular intervals for defining eight axially extending inner lands between said eight slots of said inner valve member;



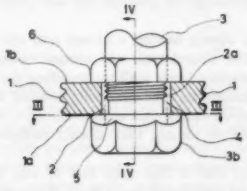
said eight inner lands including two diametrically opposed pairs of supply control lands each for controlling the distribution of fluid from one of said four supply ports to an associated pair of said cylinder ports;

each of one diametrically opposed pair of said supply control lands having a wider circumferential length than that of each of other inner lands, whereby each of said one diametrically opposed pair of said supply control lands begins to discontinue the flow of fluid, at one circumferential edge thereof while each of said other inner land still permits the flow of fluid at a corresponding one circumferential edge thereof.

4,452,275
SAFETY DEVICE FOR AN ACCUMULATOR

Nobuyuki Sugimura, 308, Mabase, Shimizu-shi, Shizuoka-ken, Japan

Filed Apr. 29, 1983, Ser. No. 490,031
Claims priority, application Japan, Nov. 17, 1982, 57-200456
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **7 Claims**



1. A safety device for an accumulator, comprising:

a pressure container (**1**) having a bore (**2**);

a valve casing (**3**) having a flange (*3b*), said casing (**3**) being inserted into the bore (**2**) in the pressure container (**1**) from the inside of the container (**1**) toward its outside to form a gap clearance (**4**) between a wall (*2a*) of said bore (**2**) and a peripheral wall (*3a*) of the valve casing (**3**);

a fuse packing interposed between the inside surface (1*a*) of said pressure container (1) and the flange (3*b*);

a fastening nut (6) threadedly mated with the valve casing (3) and engaging the outside of the container (1) around the bore to secure the fuse packing between the container (1) and the flange (3*b*);

wherein melting of the packing disengages the nut (6) from the outside of the container (1) and brings the inside surface (1*a*) of said pressure container (1) into direct contact with the flange (3*b*) with a passageway (4*a*) formed therebetween to communicate said gap clearance (4) with the inside (1*a*) of the pressure container (1).

4,452,276
ACCUMULATOR FOR PNEUMATIC OR HYDRAULIC DEVICES

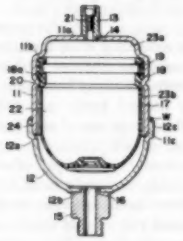
Norimi Hozumi, and Nobuyuki Nakajima, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 490,157

Claims priority, application Japan, May 11, 1982, 57-68501[U]

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **5 Claims**



1. An accumulator for pneumatic or hydraulic devices, comprising:

(a) a first generally cylindrical longitudinally extending casing having a closed end and an open end opposite the closed end, said first casing including a first peripheral side wall, said first peripheral side wall including

(1) a stepped portion extending inwardly toward the longitudinally extending center axis of said first casing, disposed adjacent the closed end of said first casing, and

(2) a perpendicular portion extending toward the open end of said first casing from said stepped portion, said perpendicular portion including a straight tip end at the open end of said first casing and a projection directed inwardly toward the center axis interconnected between said stepped portion and said perpendicular portion;

(b) a second casing having a closed end and an open end opposite the closed end, said second casing including a second peripheral side wall surrounding the center axis of said first casing tapered generally toward the center axis from the open end of said second casing to the closed end of said second casing, said second peripheral side wall including

(1) a distal end at the open end of said second casing projected outwardly away from the center axis, and

(2) an abutment extending inwardly from said distal end of said second casing toward the center axis in face-to-face engagement with said tip end of said first casing, said distal end of said second casing being welded to said tip end of said first casing; and

(c) a diaphragm made of flexible material, having a closed end and an open end opposite the closed end, said diaphragm including

(1) a third peripheral side wall interiorly defining a generally cylindrical chamber, and

(2) a connector located peripherally of the open end of said diaphragm and gripped between said stepped portion of said first casing and said projection of said first casing so as to support said diaphragm in said first casing.

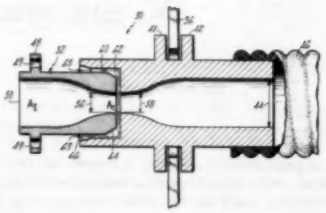
4,452,277
AUTOMATIC, FLUID TIGHT COUPLING

Roger F. Wells, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 4, 1981, Ser. No. 231,540

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—44 **1 Claim**



1. A fluid coupling for transporting fluid through an ambient pressure environment between fluid sources, comprising first and second segments, each comprising a fluid carrying aperture with a major diameter mounting port at one end and a minor diameter coupling port at a distal end thereof, said mounting ports each adapted for fluid communication with a fluid source, said first segment coupling port disposed in an end wall of a cylindrical cavity in said first segment distal end and said second segment coupling port disposed in an end wall of a cylindrical probe in said second segment distal end, said probe and cavity each having complementary chamfered edges to assist in aligning said probe for insertion into said cavity, said probe adapted for releasably engaging said cavity in coupling of said distal ends to provide registration of said coupling ports at a coupling interface to form a venturi comprised of the fluid carrying apertures of the coupled segments, said engaged coupling ports forming the throat of said venturi, each with equal minor diameters selected to provide an aperture fluid pressure at said coupling interface which is not greater than the outside ambient pressure, thereby preventing fluid escape therefrom.

4,452,278
SPECTACLE LINE BLIND WITH VENT

Joseph Quinn, Kearny, N.J., assignor to Fetterolf Corporation, Skippack, Pa.

Filed Sep. 30, 1982, Ser. No. 430,423

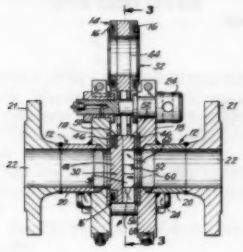
Int. Cl.³ F16L *55/10*

U.S. Cl. 138—94.3 **5 Claims**

1. A spectacle line blind including a pair of opposed spaced apart body flanges, said body flanges each having a flow opening and adapted for connecting to a pipe, and means for adjusting the spacing between said opposed body flanges, the improvement therein comprising:

a spectacle plate, said spectacle plate being movably mounted and positioned between said body flanges, a first portion of said plate, when said plate is in a first selected position, obstructing the opening in one said body flange and providing a flow path for receiving flow from said flow opening of the other said body flange, flow entering said first portion from said other body flange flow opening being discharged through lateral openings in said first portion, said first portion of said spectacle plate including

a solid member and a member having an opening therethrough, and posts connected between said solid member and said member with said opening therethrough, said posts being spaced apart and providing said lateral openings therebetween, said solid member being positioned adjacent to said one body flange for blocking said flow opening therein, said member with said opening there-



through being positioned adjacent said other body flange for venting said flow opening therein, and a second portion of said plate having an opening therethrough, said plate opening being aligned to said flange openings when said plate is in a second selected position, a flow path being provided through said line blind from one said body flange to the other said body flange.

4,452,279

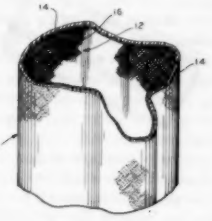
SILICONE/ELASTOMER FIBERGLASS SLEEVES

William J. Atwell, Cromwell, Conn., assignor to Titeflex Corporation, Springfield, Mass.

Filed Feb. 16, 1982, Ser. No. 349,012

Int. Cl.³ F16L *11/08*

U.S. Cl. 138—126 **8 Claims**



1. A fire sleeve for use as a protective covering for another structure, the protective covering sleeve being completely separate from the other structure, said sleeve comprising a tubing with an extremely low flexural modulus which forms any suitable randomly variably cross-sectional shape so that sleeve easily slips over the other structure, said sleeve being composed of an outer elastomer jacket bonded to a braided inner layer of yarn, said inner laying being formed with air pockets and voids which enable the elastomer of said jacket to penetrate and bond into said air pockets and voids and to be more uniformly distributed over the surface of the yarn during a molding process.

4,452,280

FLEXIBLE HOSE WOUND OF A WEB MATERIAL AND REINFORCED WITH WIRE WINDINGS

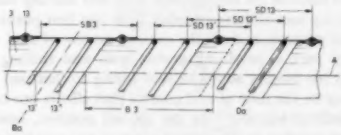
Friedrich Werner, Plettenberg, Fed. Rep. of Germany, assignor to Alcan Ohler GmbH, Plettenberg-Ohle, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,392

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 3125499

Int. Cl.³ F16L *11/00*

U.S. Cl. 138—131 **3 Claims**



1. A flexible hose wound of a constantwidth web material with overlapping edges of successive windings and reinforced with windings of a wire material affixed to the interior surface of the web material, said wire material comprising at least two juxtaposed wire coils having the same pitch as the wound web, one of the coils being embedded between the overlapped edges of successive web windings and at least one of the coils being spaced from the overlapped edges of successive web windings and engaged with only one web material winding.

4,452,281

COUPLING ARRANGEMENT USABLE IN A TEXTILE MACHINE

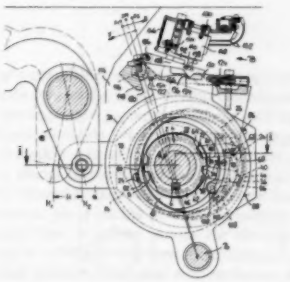
Francisco Speich, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

Filed Jun. 17, 1982, Ser. No. 389,550

Claims priority, application Switzerland, Jun. 26, 1981, 4234/81

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—76 **14 Claims**



1. Coupling arrangement such as for a textile machine, comprising a first drive shaft capable of intermittent rotation about the axis thereof, an eccentric hoop extending around said drive shaft, a connecting member extending around said drive shaft with said eccentric hoop located between said drive shaft and said connecting member with said connecting member supported on said eccentric hoop, a coupling part movably guided on said eccentric hoop for movement approximately radially of said drive shaft, a first coupling recess associated with said drive shaft, a second coupling recess associated with said connecting member with said first coupling recess located radially inwardly from said second coupling recess, a shifting member arranged to displace said coupling part alternately between engagement with said first coupling recess and said

second coupling recess, lead cams for guiding said coupling part and retaining said coupling part in one of said first and second recesses into which it is displaced, said shifting member supported eccentrically relative to said drive shaft and arranged to be pivoted about the support between a first position and a second position, a spring biasing said shifting member into the first position, and a control device for pivoting said shifting member between the first and second position wherein the improvement comprises a machine frame, said control device includes a second drive shaft rotatably mounted on said machine frame, a rocking lever fixed to said second drive shaft for rotation therewith, said rocking lever having a driving surface thereon for engagement with said shifting member for displacing said shifting member from the first position to the second position against the biasing action of said spring, a control part, a pawl engageable with said shifting member against the biasing action of said spring so that said pawl depending on the state of said control part effects one of moving said shifting member into the second position, holding said shifting member in the second position and moving said shifting member into the first position.

4,452,282

SYSTEM FOR MOUNTING HARNESS FRAMES IN A WEAVING LOOM

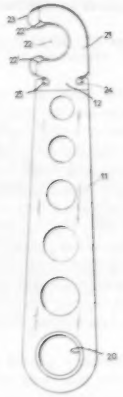
Arsène Notter, Mulhouse, France, assignor to Societe Alsacienne de Construction Mecaniques de Mulhouse, France

Filed Apr. 5, 1982, Ser. No. 365,276

Claims priority, application France, Apr. 15, 1981, 81 07581

Int. Cl.³ D03C *13/00*

U.S. Cl. 139—88 **7 Claims**



1. A system for mounting the harness frames of a weaving loom on the rockers which are driven in oscillating motion by the shedding mechanism, comprising a link-arm, the lower arm of said link-arm being pivotally connected to the rockers aforesaid and the link-arm head being detachably coupled to the harness frames, wherein the link-arm head is provided with a semi-circular recess comprising an opening which is defined by an outwardly-flared portion of the link-arm head, and in which recess there may be inserted a stub-shaft having a circular cross-section and carried by the harness frame, and wherein said link-arm head carries a spring within the recess which serves to retain said stub-shaft and is spaced from but adjacent said outwardly-flared portion.

4,452,283

WEAVING REED HAVING A PLURALITY OF REED DENTS

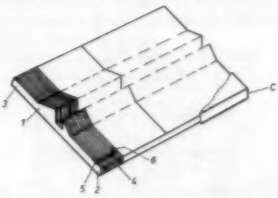
Bernhard Koch, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Sep. 29, 1982, Ser. No. 426,655

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3511996

Int. Cl.³ D03D *49/62*

U.S. Cl. 139—192 **5 Claims**



1. A reed dent for the manufacture of a weaving reed having a plurality of flat reed dents of equal thickness, the reed dent having opposed end sections terminating in side edges for being held in a reed channel of the weaving reed, one of said end sections of the reed dent having an outer edge thereof provided with an identification notch, being spaced from said side edge at said one end section a distance corresponding to the thickness of said reed dent, whereby stacked reed dents of like thickness will have aligned identification notches.

4,452,284

PAPER MACHINE SCREEN AND PROCESS FOR PRODUCTION THEREOF

Konrad Eckstein, Pfullingen, and Hermann Wandel, Reutlingen, both of Fed. Rep. of Germany, assignors to Hermann Wangner GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 932,224, Aug. 9, 1978. This application Sep. 17, 1980, Ser. No. 187,895

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736796

Int. Cl.³ D03D *3/04*

U.S. Cl. 139—383 A **6 Claims**

1. A paper machine screen for the wet paper processing end section of a paper machine woven of longitudinal and transverse synthetic filaments, comprising:

(a) at least said longitudinal filaments being of a synthetic material capable of elongation under stress;

(b) said screen having a paper region, and at least one marginal region between said paper region and a lateral edge of said screen;

(c) the longitudinal filaments in said at least one marginal region having a longitudinal elastic elongation which is

about 50% greater than that of the longitudinal filaments in said paper region measured at a stress of 100 N/cm and based on equal lengths of longitudinal threads in the marginal region and longitudinal threads in the paper region of the screen; and

(d) said longitudinal filaments in said at least one marginal region having a thickness different from that of the longitudinal filaments in the paper region.

4,452,285

DEVICE FOR FILLING BOREHOLES

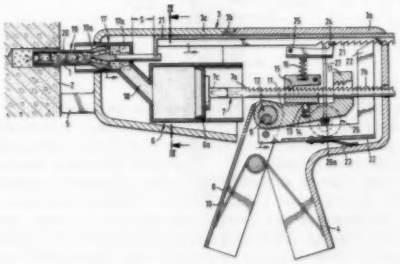
Erich Leibhard, Munich; Armin Herb, Peissenberg; Arndt Bergner, and Gusztav Lang, both of Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 8, 1981, Ser. No. 328,511

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047312

Int. Cl.³ B67C *3/00*; G01F *11/00*

U.S. Cl. 141—392 **8 Claims**



1. Device for filing boreholes with a flowable substance such as a single or multi-component adhesive, filler, sealer or primer, comprising a storage container for each of the components of the substance to be filled into the borehole, a housing for holding said storage container, said housing having a front end from which the substance is dispensed and a rear end, means located at the front end of said housing for dispensing the substance, means located within said housing for flowably displacing the substance from each said storage container to said dispensing means, a first lever pivotally mounted on said housing and interconnectable with said displacing means for operating said displacing means and supplying the substance from each said storage container to said dispensing means, wherein the improvement comprises that said dispensing means includes a supply pipe mounted in the front end of said housing for receiving the substance from each said storage container, an outlet nozzle arranged to receive the substance from said supply pipe and also arranged to be inserted into the borehole for supplying the material directly into the borehole, and means located within said housing and engageable with said outlet nozzle for telescopically displacing said outlet nozzle into said supply pipe for displacing the substance from said supply pipe through said outlet nozzle into the borehole, said means for telescopically displacing said outlet nozzle comprises an elongated feed member located within said housing and connected to said outlet nozzle, and a second lever pivotally connected to said first lever and selectively engageable with said feed member for displacing said feed member in the elongated direction thereof, and a switching mechanism for alternately applying the motion of said first lever to said means for displacing the substance from said storage container and to said second lever selectively engageable with said feed member for displacing said feed member and retracting said outlet nozzle into said supply pipe.

4,452,286

APPARATUS FOR CUTTING TREE PARTS

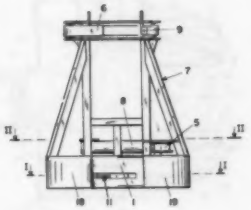
Ernst Menzi, Widnau, Switzerland, assignor to Ernst Menzi AG, Widnau, Switzerland

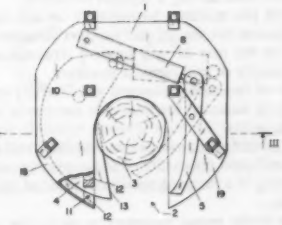
Filed Feb. 10, 1982, Ser. No. 347,561

Claims priority, application Switzerland, Feb. 19, 1981, 1097/81

Int. Cl.³ A01G *23/02*

U.S. Cl. 144—34 E **9 Claims**



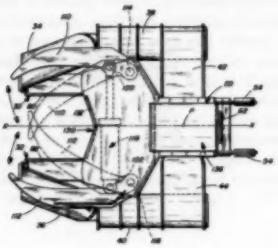


1. Apparatus for cutting tree parts adapted to be operatively mounted on vehicles comprising a base structure configured to define a concave cutting recess for receiving therein a tree part to be cut, at least one pivotable holding arm adapted to grip a tree part engaged within said cutting recess, a cutter plate having a generally planar configuration and defining a cutting edge adapted to be moved through said cutting recess to cut a tree part held therein, pivot means pivotally mounting said cutter plate on said base structure, means for driving said cutter plate through a cutting stroke between a retracted position and an extended position by pivotal motion thereof about said pivot means, and means located between said pivot means and said cutting recess defining a slotted guide opening adjacent said cutting recess through which said cutter plate moves during said cutting stroke, said cutter plate thereby projecting freely through said slotted guide opening into said cutting recess over a sector thereof adjacent said cutting edge as said cutting edge plasses through said cutting recess, said cutting edge of said cutter plate being held within said slotted guide opening essentially along the entire length thereof when said cutter plate is in said retracted position, said slotted guide opening extending essentially completely across the entire expanse of said cutter plate essentially throughout said cutter stroke to completely support said cutter plate throughout movement thereof between said retracted position and said expanded position.

4,452,287
FELLER ASSEMBLY FOR TREE HARVESTING APPARATUS

Paul H. Whitcomb, Woodstock, Canada, and Thomas G. Bakowski, West Seneca, N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 19, 1982, Ser. No. 399,628
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 E **11 Claims**

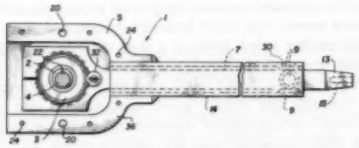


1. A tree harvesting apparatus of the type including a tree feller assembly, said assembly comprising:
a feller head having a support structure;
a pivot pin mounted horizontally on said support structure adjacent the top of said support structure and extending from the rear of said support structure and terminating centrally of said support structure,
a pair of oppositely disposed and laterally spaced shear arm means mounted for pivotable movement about said pivot pin,
each of said arm means extending from said pivot pin downwardly and forwardly of said support structure and terminating in a forward portion in front of said support structure,
cutter blade means mounted on each arm on said forward portion of each arm, and
power actuator means operably connected to said arm means and extending laterally therebetween and substantially forward of and below said pivot pin for pivoting said arms and cutter blade means toward and away from each other upon actuation thereof.

4,452,288
POWERED TREE CHIPPER OR BARK HACK

Lawrance N. Shaw, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 23, 1982, Ser. No. 351,400
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—208 C **28 Claims**

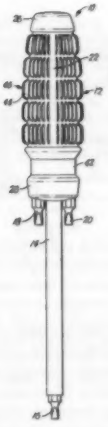


1. A cutting tool for use with a motor means having a rotary power shaft, said tool comprising a reciprocatory motion cutter means, and an elongated connecting rod, means to mount said cutter means at one end of said connecting rod, means to drivingly engage the other end of said connecting rod with said rotary power shaft, slider bearing means slidingly supporting said other end of said connecting rod closely adjacent said cutter means; whereby the rotary motion imparted to said connecting rod at said motor means end is transformed into substantially pure reciprocatory motion of said cutter means; said slider bearing means comprising the sole bearing support of said connecting rod carrying said cutter means, and said connecting rod with said cutter means mounted thereon comprising the sole moving part of said cutting tool driven by said rotary power shaft.

4,452,289
COMBINATION HAND GRIP AND BITS STORAGE

Lloyd T. Smith, Newton, Kans., assignor to Fiskars Manufacturing Corporation, Wausau, Wis.

Filed Dec. 28, 1981, Ser. No. 335,076
Int. Cl.³ B25G *1/08*
U.S. Cl. 145—62 **6 Claims**

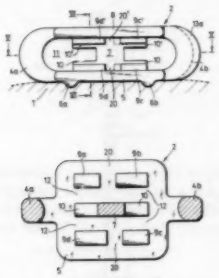


1. A handle for applying torque to a tool shank comprising:
an elongated, relatively thick-walled, transversely circular, resilient tube of soft, pliable, self-sustaining, yieldable, rubber-like, elastomeric material having elastic properties rendering the same subject, when grasped and squeezed by the human hand, to inward deformation to the shape and size of the palm of said hand and, upon release of hand pressure squeezing, to immediate return to the original size and configuration of the tube; and
an elongated, relatively hard, rigid, shank-supporting core of plastic material secured to the tube therewithin for maintaining the handle against lateral bending when gripped and turned about its longitudinal axis,
said tube having an integral cap at one end thereof and an integral closure head at its opposite end,
said core being completely encapsulated within and tightly filling said tube in engagement with the cap and with the head,
said core having a shank-receiving recess extending inwardly from said opposite end and terminating in a flat, uninterrupted surface in the core intermediate the cap and the head,
said head having a centering, shank clearance bore aligned and registering with the recess,
said head having a storage cavity extending inwardly thereinto from the other end thereof in parallelism with said bore adapted to frictionally receive a portion of a tool bit releasably attachable to the shank remote from the handle.

4,452,290
CHAIN FOR THE TIRES OF HEAVY DUTY AUTOMOTIVE VEHICLES

Heinz Asbeck, Markusstr. 38, D-4600 Dortmund-Hohensyburg, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,126
Claims priority, application European Pat. Off., Jan. 23, 1982, 82100459.5
Int. Cl.³ B60C *27/20*
U.S. Cl. 152—244 64 Claims



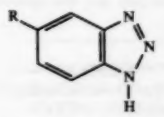
1. A protecting and antiskid chain for use on the tires of automotive vehicles, especially on the tires of high-speed heavy-duty earth moving and like vehicles, comprising a pair of main links each including a tire-contacting base plate and a ground-contacting outer plate which is spaced apart from, substantially parallel to and defines a compartment with the base plate, each of said plates having a substantially polygonal outline with two sides located substantially opposite each other and the plates of each link being in register with one another, the length of one side of each of said plates exceeding the thickness of the respective link, as considered at right angles to the planes of said plates, each link further including two coplanar yokes rigid with and disposed in a plane which is substantially normal to the respective plates and located outside of the confines of such plates, said yokes extending from said sides of the respective plates and each link also including a plurality of projections provided on at least one of the plates and disposed in the respective compartment, said projections including a first group of several projections at one side and a second group of several projections at the other side of the respective normal plane, said plates further having outer sides and at least one of said links comprising at least one protuberance at the outer side of at least one of the respective plates; and a first shackle articulately connecting said links and including a web interfitted with one yoke of one of said links and two legs having detent members extending into the compartment of the other of said links and engaging with selected projections in such compartment to anchor the legs in the other link, said groups of projections of said other link defining guide channels for the detent members on the legs of the shackle.

4,452,291
COATED FILAMENT AND COMPOSITE THEREOF WITH RUBBER

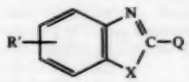
Robert M. Shemenski, North Canton, and Thomas W. Starinshak, Berea, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 245,830, Mar. 20, 1981, abandoned.
This application Jan. 27, 1983, Ser. No. 461,335
Int. Cl.³ B60C *1/00*; B29H *17/00*; B05D *3/02*; B32B *15/08*
U.S. Cl. 152—359 2 Claims

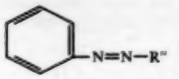
1. A pneumatic rubber tire having a generally toroidal shape and comprised of a tread, spaced inextensible beads and sidewalls connecting said beads and tread with a supporting carcass therefor, where said carcass is a composite of sulfur-cured rubber containing therein a filament or cord thereof as reinforcement therefor, wherein said filament, optionally in the form of a multiple of filaments cabled together as a cord, is provided as a composite of (A) a filament and/or cord of steel, (B) a microscopically porous metallic coating thereon, comprised primarily of brass and/or zinc, and (C) an overcoat composed of (1) at least one compound selected from the group consisting of those of the following formula:



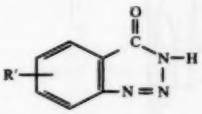
(I)



(II)

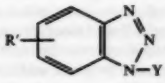


(III)



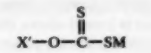
(IV)

(2) at least one diphenyl carbazide or 1,5-pentamethylene tetrazole, (3) a synergistic mixture comprised of 100 parts by weight benzotriazole and about 10 to about 150 parts by weight of a compound having the formula:



(V)

or (4) a synergistic mixture of (i) 100 parts by weight benzotriazole or substituted benzotriazole of Formula (I) and, correspondingly, (ii) about 20 to about 75 parts by weight of at least one of dithiooxamide, 1,2,4-triazole, 2,1,3-benzothiadiazole and/or about 0.5 to about 10 parts by weight of at least one compound having the formula:



(VI)

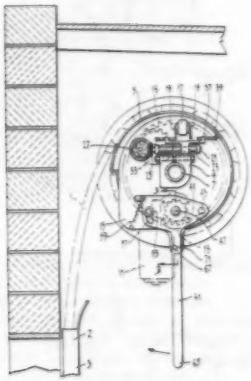
where R is a nitro radical, where R′ is a radical selected from at least one of nitro, hydrogen and saturated alkyl radicals containing from 2 to 10 carbon atoms, where R″ is a radical selected from at least one of —NH—C_6H_5 and —CS—NH—NH—C_6H_5, radicals, where X is a radical selected from at least one of oxygen and ammonium, where X′ is a radical selected from at least one of saturated alkyl radicals containing 1 to 10 carbon atoms, alkyl substituted or unsubstituted phenyl, benzyl or cyclohexyl; where M is a radical selected from at least one of alkali metal radical, a polyvalent metal selected from at least one of copper and zinc, or an alkali earth metal; where Y is a hydroxyl radical and where Q is a radical selected from at least one of hydrogen or —SM radicals; provided that when Q is hydrogen, X is oxygen.

4,452,292

AUTOMATIC DOOR OPENER

Simon Leivenzon, and Zvi Leivenzon, both of Caulfield, Australia, assignors to Firmagroup Australia Pty. Ltd., Victoria, Australia

Division of Ser. No. 279,362, Jul. 1, 1981, abandoned. This application May 10, 1983, Ser. No. 490,988
Claims priority, application Australia, Mar. 27, 1981, PE8188
Int. Cl.³ E06B 9/204
U.S. Cl. 160—133 6 Claims



1. In a combination of a roller curtain door having a door curtain which is wound on and off a roller door drum to open and close the door respectively, an automatic opener for the door, and a locking facility for mechanically locking the door in a closed position in which the automatic opener includes a reversible electric drive motor having a pinion gear drivably connected therewith and arranged to mesh with a ring gear connected to said door drum to drive said door drum to wind the door curtain on and off said door drum, and an electric control circuit connected to operate the electric motor from a source of electric power, and in which said circuit controls the operation of said electric drive motor, the improvement comprising:

sensing means connected in series with said electric circuit to sense a change in the electrical current drawn by said circuit above that which is normal for operation of said circuit and motor and to disconnect said circuit in such circumstances,

said sensing means further comprising a switching means connected to switch off power from said source to said circuit once the current flowing through said switching means to said circuit is sensed above that which is normal and to automtically restablish the power after a time interval, and further operable in the event said circuit re-experiences electrical current above that which is normal to again switch off the power and to continue to cycle in such on/off mode until the electrical current demand condition returns to normal,

said reversible electric motor mounted on an arm which is mounted for swinging movement about an axle, the central longitudinal axis of said axle being substantially parallel with a central longitudinal axis of said drum and spaced from a central axis of the pinion gear,

said swinging movement being such that the reversible electric motor can be drive engaged or disengaged with said ring gear by swinging of said arm about said axle to allow said door curtain to be opened manually in the event of power failure by disengaging said drive.

4,452,293

FOLDING DOOR

Paul Gorse, 133 Queen St., E., Mississauga, Ontario, Canada L5G 1N1

Continuation of Ser. No. 174,704, Jul. 28, 1980, abandoned, which is a continuation of Ser. No. 003,247, Jan. 15, 1979, abandoned. This application Feb. 24, 1983, Ser. No. 469,206
Claims priority, application Canada, Jan. 20, 1978, 295350
Int. Cl.³ E06B 3/16
U.S. Cl. 160—232 2 Claims

1. An articulated overhead garage-type door having improved thermal insulation properties, the door including plural horizontally oriented door sections hingedly connected to one-another and each section extending the full width of the door, each door section comprising:

(a) a rectangular open frame including top and bottom horizontally disposed rails extending the full width of the door and opposed vertical side rails, the rails having similar mutually aligned channel portions of rectangular cross-section facing inwardly of the frame;

(b) a thermal insulating panel of plastic material supported in the frame and extending transversely from one side of the door to the other, the panel comprising two opposed mutually-parallel planar sheets spaced from one-another and joined by a plurality of integrally formed closely adjacent ribs extending parallel to the top and bottom rails from one side of the door to the other and forming within the panel plural air passages, and the panel including two vertically disposed closure means bonded to the side edges of the panel and sealing the air passages to form mutually-isolated totally enclosed air pockets, the planar sheets and the closure means forming a flat rigid panel of uniform external thickness and of rectangular cross-section receivable within the channel portions of the rails; and

(c) a layer of insulating material in each channel portion interposed between the rail and the panel.

4,452,294

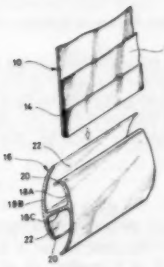
COUPLING STRUCTURE FOR A SCREEN WITH A FIXING ROD

Shigeki Fukuchi, Tokyo, Japan, assignor to Metako Kigyo Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1982, Ser. No. 435,420
Claims priority, application Japan, Oct. 23, 1981, 56-169703
Int. Cl.³ A47H 23/01
U.S. Cl. 160—395 8 Claims

1. A coupling structure for coupling a screen with a fixing rod, comprising a screen having at its end portion a predetermined length of an accessory section provided with a pair of rigid engaging plates, a fixing rod of generally elliptical cross-section and constituted by spaced side walls symmetrically interconnected by an intermediate partitioning wall defining with said side walls a pair of open ended coupling chambers, said pair of rigid engaging plates on the accessory section being

oriented in superposed relation and disposed in one of the coupling chambers of said fixing rod in oblique disposition for continuously engaging at its opposite ends the wall of the



coupling chamber within which the rigid engaging plates are disposed, said accessory section having a length beyond the fixed plates for covering the outer face of the fixing rod and for insertion in at least one of the chambers thereof.

4,452,295

APPARATUS FOR PRODUCTION OF CORES FROM FLUIDIZED SANDS IN HOT BOXES

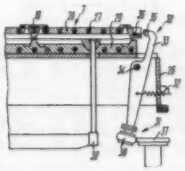
Vitaly A. Zitser, Dolgoprudny, Moskovskaya; Alexandr V. Melnikov, Moscow; Leonid V. Bachelis; Igor I. Dreishev, both of Moscow; Eduard G. Shartner, Karaganda; Vladimir D. Abaskalov; Vladimir A. Levinson, both of Karaganda; Nikolai K. Shishkin, Moscow; Vladimir A. Ivanov, and Jury E. Morozov, both of Moscow, all of U.S.S.R., assignors to Tsentralnoe Proektnokonstruktorskoe I Tekhnologicheskoe Bjuro Glavsantekhprom, U.S.S.R.

Filed May 15, 1981, Ser. No. 264,183

Claims priority, application U.S.S.R., May 16, 1980, 2917101

Int. Cl.³ B22C *11/04*

U.S. Cl. 164—186 **2 Claims**



1. An apparatus for the production of cores from fluidized sand in core boxes made up of a top section, at least two first wedging members fixed on said top section, a bottom section, gates adapted to close core print holes of these boxes, and a pushing mechanism, comprising:

a support frame;

a device arranged on said support frame for the preparation of a sand mixture;

an appliance arranged on said support frame for packing the sand mixture in said core box;

a device arranged on said support frame for separation of said core box;

an arrangement arranged on said support frame for the delivery of finished cores;

transport means mounted on said support frame;

satellites adapted to mount said core boxes and positioned on said transport means;

at least two individual shafts built in each one of said satellites;

at least one spring-loaded grapple mounted on each one of said shafts and having a first end and a second end;

at least one second wedging member mounted on the first end of each said grapple adapted to interact with a respective first wedging member of a respective core box;

said spring-loaded grapples and second wedging members mounted thereon constituting means for joining the top section with the bottom section of a respective core box;

stops positioned on said support frame;

rollers mounted on the second end of each said grapple for interaction with a stops;

said stops forming in combination with said rollers, a mechanism of disjoining said top and bottom sections of said core box.

4,452,296

ALUMINUM-DIFFUSION COATED STEEL PIPE GATING SYSTEM

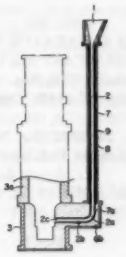
Tomiaki Amano; Tetsuya Eda, both of Kitakyushu; Sunao Nishi, Nagasaki; Shigeyoshi Shichiri, Nagayo, and Takayuki Fukunaga, Ariake, all of Japan, assignors to Hitachi Kinzoku Kabushiki Kaisha, Tokyo and Shinto Kogyo Kabushiki Kaisha, Nagasaki, both of, Japan

Filed Jul. 26, 1982, Ser. No. 401,975

Claims priority, application Japan, Jul. 25, 1981, 56-116551

Int. Cl.³ B22C *9/08*

U.S. Cl. 164—363 **6 Claims**



1. In a casting mold having a mold cavity therein and a metallic gating pipe system for pouring molten metal into the mold cavity, the improvement in which the gating pipe system comprises an Al-diffusion coated steel pipe having an aluminum-coated layer on at least the surface of the steel pipe to be in contact with the molten metal.

4,452,297

PROCESS AND APPARATUS FOR SELECTING THE DRIVE FREQUENCIES FOR INDIVIDUAL ELECTROMAGNETIC CONTAINMENT INDUCTORS

Gary L. Ungarean, Woodbridge; John C. Yarwood, Madison; Peter J. Kindlmann, Guilford, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 5, 1982, Ser. No. 355,036

Int. Cl.³ B22D *11/00, 27/02*

U.S. Cl. 164—467 **7 Claims**

1. A process for casting molten material into ingots of desired shape comprising the following steps:

providing two inductors for separately receiving said molten material and applying first and second electromagnetic force fields to form the molten material into said ingots;

locating said inductors adjacent each other whereby said first and second force fields interact with each other;

applying a first alternating current at a first desired frequency to one of said inductors to generate the first magnetic force field;

applying a second alternating current at a second desired frequency to generate the second magnetic force field;

selecting said second frequency in relation to said first frequency in order for first and second resulting containment

currents within the first and second inductors to have all their generated frequency components above a desired low frequency limit (LFL) of about 500 Hz so as to prevent substantial melt stirring and containment instabilities in either of said first or second inductors;

selecting the second desired frequency out of the range between $F_1 \pm LFL$ where F_1 is the first desired frequency.

4,452,298

METHOD AND APPARATUS FOR COOLING CONTINUOUSLY CAST METAL STRANDS

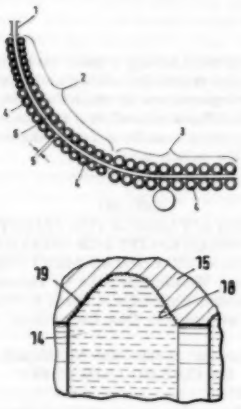
Werner Rahmfeld, Mulheim, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,126

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112673

Int. Cl.³ B22D *11/12, 11/124*

U.S. Cl. 164—485 **9 Claims**



1. A method for cooling a continuously cast metallic strand, comprising:

(a) passing said metallic strand through a strand guide located downstream of a continuous casting mold;

(b) providing said strand guide with hollow structural roller elements, said roller elements being separated from one another in the range of about 3–5 mm.; and

(c) exclusively cooling said continuously cast metallic strand and cooling said hollow structural roller elements by continuously passing a cooling fluid through the interior of said structural roller elements.

3. An apparatus for cooling a continuously cast metallic strand, comprising:

(a) a strand guide located downstream of a continuous casting mold;

(b) said strand guide having a plurality of hollow structural roller elements;

(c) said structural roller elements being separated from one another in the range of about 3–5 mm.; and

(d) said roller elements having cooling fluid continuously pass through its interior for exclusively cooling said continuously cast metallic strand and for cooling said roller elements.

4,452,299

PROCESS FOR CASTING METALS

Bruce A. Gruber, Worthington; Heimo J. Langer, and William R. Dunnavant, both of Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 320,026, Nov. 10, 1981, Pat. No. 4,394,466, which is a division of Ser. No. 174,970, Aug. 4, 1980, Pat. No. 4,320,218. This application Apr. 15, 1983, Ser. No. 486,164

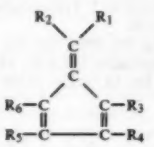
Int. Cl.³ B22C *1/20*

U.S. Cl. 164—521 **22 Claims**

1. A process for casting a metal which comprises:

(a) pouring metal while in the liquid state into or around a molded article obtained by:

(1) introducing a molding composition into a mold wherein said molding composition comprises a major amount of aggregate and an effective bonding amount up to about 40% by weight of the aggregate of a composition capable of curing in the presence of oxygen containing a fulvene of the formula:



wherein each R_1 and R_2, individually, is hydrogen or a hydrocarbon containing 1 to 10 carbon atoms, or a hydrocarbon containing 1 or more oxygen bridges in the chain; or a furyl group; or are interconnected to form a cyclic group; each R_3 and R_6, individually, is hydrogen or methyl; each R_4 and R_5 is hydrogen or methyl or

provided that a maximum of only one such R_3, R_4, R_5, and R_6 is methyl and provided that a maximum of any one such R_4 and R_5 is

or prepolymer thereof or mixtures thereof; and a catalytic amount of a metal salt of a carboxylic acid catalyst wherein the metal constituent of said salt is capable of existing in at least two valence states;

(2) hardening the composition in the mold to become self-supporting; and

(3) thereafter removing the shaped article of step (2) from

the mold and allowing it to further cure, thereby obtaining a hardened, solid, cured, molded article;

(b) allowing the metal to cool and solidify, and

(c) separating the molded metal article.

4,452,300

METHOD FOR THE EXCHANGE OF HEAT BETWEEN LIQUID AND AIR AND AN APPARATUS FOR CARRYING THE METHOD INTO EFFECT

Sten O. Zeilon, Heimdahlsgatan 21, S-261 62 Glumslöv, Sweden

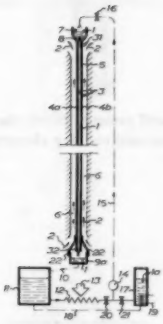
PCT No. PCT/SE81/00340, 371 Date Jul. 23, 1982, 102(e) Date Jul. 23, 1982, PCT Pub. No. WO82/01938, PCT Pub. Date Jun. 10, 1982

PCT Filed Nov. 24, 1981, Ser. No. 403,638

Claims priority, application Sweden, Nov. 25, 1980, 8008235

Int. Cl.³ F28F *25/02;* F28D *9/00*

U.S. Cl. 165—1 **10 Claims**



1. A method for the exchange of heat between a liquid and air, said method comprising:

(a) providing at least two independent, band-shaped thin membranes suspended vertically and independently of each other,

(b) positioning opposite surfaces of said membranes in closely spaced relationship,

(c) uniformly supplying a liquid between the upper portions of the membranes and along the width thereof to flow between the membranes by gravity and form a liquid film that spreads under capillary action to hold the membranes by the adhesive forces in the liquid film,

(d) conducting air into contact with the surfaces of said membranes that face away from each other, and

(e) collecting the liquid from the lower part of the space between said membranes.

4,452,301

AIR CONDITIONING AND HEATING SYSTEM AIR TEMPERATURE CONTROL ARRANGEMENT

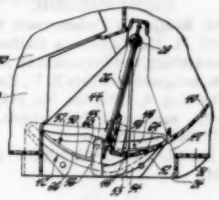
Daniel F. Last, Romeo, and Robert H. Roth, East Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1982, Ser. No. 383,490

Int. Cl.³ F28F *27/02;* B60H *1/00*

U.S. Cl. 165—42 **3 Claims**

1. In an air conditioning and heating system having a manually operated air temperature control valve that is movable in both an air conditioning mode and a heating mode to regulate the amount of air passing through a heat exchanger to thereby control the temperature of the air delivered by the system and wherein the amount of air required to pass through the heat exchanger at the same air temperature control valve position in both modes differs in order to establish linearity between the temperature of the air delivered by the system and the air temperature control valve position, an improved air temperature control valve arrangement comprising air baffle means movable with and adjustable relative to the air temperature control valve so as to adjust the amount of air passing through the heat exchanger in the various regulating air temperature control valve positions, and dual cam track operated air baffle control means for adjusting said air baffle means relative to said air temperature control valve with movement of the latter



and selectively according to one of two predetermined and different cam tracks having linearity patterns determined by the respective air conditioning mode and heating mode heat transfer requirements so as to provide substantial linearity between the temperature of the air delivered by the system and the air temperature control valve position in both the air conditioning and heating modes.

4,452,302

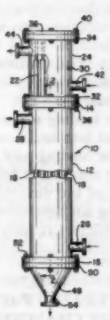
HEAT EXCHANGER WITH POLYMERIC-COVERED COOLING SURFACES AND CRYSTALLIZATION METHOD

William S. Schoerner, Plainfield, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 11, 1981, Ser. No. 262,528

Int. Cl.³ F28F *19/02;* B01D *9/04*

U.S. Cl. 165—133 **9 Claims**



1. An improved falling film heat exchanger for concentrating an aqueous liquid feed stream by crystallizing ice therefrom by indirect heat exchange comprising:

a plurality of spaced apart vertical metal tubes penetrating two vertically spaced apart upper and lower horizontal tube sheets;

a metal shell around the tube sheets and connected thereto;

means to deliver a cooling fluid around the tubes inside of the shell between the tube sheets;

means to deliver an aqueous liquid feed stream into a feed box partially defined by the upper tube sheet so that the liquid flows down the tubes as a falling film;

a layer of a polymeric material, to which ice crystals do not significantly adhere, on each tube internal wall, and with said layer being sufficiently thin for efficient heat transfer from the falling film through the polymeric layer and the tube wall; and

means to withdraw a mixture of aqueous liquid containing ice crystals from the bottom end of the tubes and recycle the mixture to the top of the tubes to flow down the tubes as a falling film, so as to produce an ice slurry.

4,452,303

DEVICE AND A METHOD FOR RECOVERING HEAT FROM THE SOIL

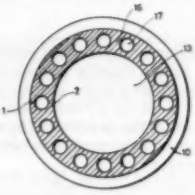
Theodorus P. M. Bontje, Lg Dedemsvaart; Gerrit Schuldink, Ommen; Gerrit H. Heetbrink, Ag Dalfsen; Warner J. de Putter, An Hardenberg, and Bernardus H. Kok, Za Lutten, all of Netherlands, assignors to Wavin B. V., Zwolle, Netherlands

Filed Aug. 4, 1981, Ser. No. 289,900

Claims priority, application Netherlands, Aug. 7, 1980, 8004513; Aug. 7, 1980, 8004509

Int. Cl.³ F24J *3/02*; F28D *7/12*

U.S. Cl. 165—142 **3 Claims**



1. A heat exchange apparatus for absorbing heat from ground water and the soil, said heat exchange apparatus comprising

(a) an outer plastic tube having a closed bottom,

(b) an inner plastic tube concentrically disposed therein whose inner side is in open communication with an annular space defined between said inner and outer plastic tubes, said annular space being divided into channels by plastic partitions integral with said inner and outer tubes and being thin so that the total cross sectional area of said channels proximates the cross sectional area of said annular space, said channels being a plurality of round cross sections and being small relative to the cross section of the total annular space resulting in a laminar flow of liquid passed through said channels,

(c) inlet means for leading a heat exchange fluid into said annular space and into said inner tube sequentially,

(d) outlet means for leading said heat exchange fluid from within said inner concentric plastic tube and said annular space externally of the device, and said inner and outer plastic tubes being adapted to transport said heat exchange fluid being of sufficient rigidity to be placed in the soil.

4,452,304

REMOTELY OPERATED PACKER AND ANCHOR APPARATUS FOR CHANGING A GEOTHERMAL WELLHEAD VALVE

Frank W. Barrier, Haughton, and Kenneth W. Winterrowd, Shreveport, both of La., assignors to Tri-State Oil Tool Industries, Bossier City, La.

Filed Jun. 24, 1981, Ser. No. 277,035

Int. Cl.³ E21B *33/03*

U.S. Cl. 166—70 **4 Claims**

1. A well packer comprising

a tubular body with a bore,

a slip cone,

a plurality of slips activated by said cone,

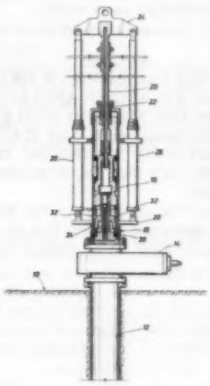
a packing element,

means supporting said cone, said slips and said packing element from said body,

means for releasably connecting a running string to the upper end of the body,

a piston slidable in the body bore,

said piston holding the slip cone in unset position responsive to fluid pressure in the running string whereby on release of fluid pressure in the running string said slip cone moves



responsive to well pressure below the packing element to set said slips and said packing element.

4,452,305

KICKOVER TOOL WITH PIVOT ARM RETRACTION MEANS

Kenneth L. Schwendemann, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 14, 1981, Ser. No. 293,017

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—117.5 **9 Claims**

1. A 90-degree type kickover tool for installing well tools in or removing well tools from side pocket mandrels in well bores, each said side pocket mandrel having a body with a main bore, a belly offset from the main bore, and a receptacle bore alongside the main bore and accessible to tools lowered into the well from the surface, said kickover tool comprising:

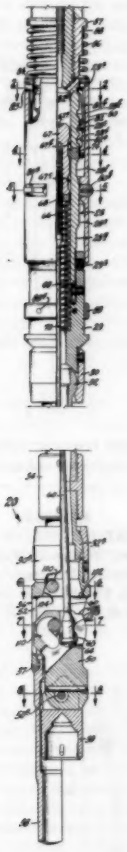
a. an elongate body;

b. pivot arm means having tool carrier means thereon and having a J-shaped transverse slot therethrough;

c. a pivot pin passing through said J-shaped slot and having its ends received in aligned apertures in said body, said pin and slot connection allowing pivotal and sidewise movement of said pivot arm means relative to said body between first, second and third positions;

d. means for pivoting said pivot arm means approximately 90 degrees between said first position in which said pivot arm is substantially aligned with the longitudinal axis of said body and said second position in which the tool carrier means thereon is substantially aligned with the receptacle bore in the offset belly of the side pocket mandrel and said

third position in which said pivot arm is again substantially aligned with said body; and



e. means for holding said pivot arm means in said third position.

4,452,306

APPARATUS FOR DETECTING RUPTURES IN DRILL PIPE ABOVE AND BELOW THE DRILL COLLAR

Jack L. Polley, P.O. Box 888, 14 E. Second, Hutchinson, Kans. 67501

Filed Sep. 27, 1982, Ser. No. 423,863
Int. Cl.³ E21B *12/00*
U.S. Cl. 166—155 **4 Claims**

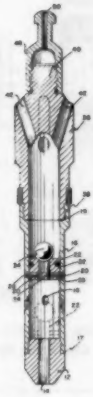
1. An apparatus for detecting ruptures in a drill pipe above and below the drill collar comprising a nose cone means having a nose cone aperture longitudinally disposed and a threaded end;

a lower cylindrical hollow body means including a pair of threaded ends and having a structure defined by a plurality of circulation by-pass apertures and a plurality of shear pin apertures, said cone means threadably engaged to one of the pair of said threaded ends of said lower body means;

a cylinder actuator means having an actuator longitudinal bore and a structure defined by a plurality of cylindrical actuator apertures along the sides of the actuator means and communicating with the actuator bore;

a plurality of shear pin means slidably passing into and through the shear pin apertures of the lower body means and into the actuator apertures to install the cylinder actuator means into the lower body means;

a steel ball means seated over one end of said actuator bore to function as a check valve;



an upper cylindrical hollow body means having a pair of threaded ends with one end threadably engaged to one of the threaded ends of said lower body means, said upper body means having a structure defined by a plurality of upper body apertures;

U-cup seal means slidably positioned on the upper body; and

a retrieval cap means having a longitudinal bore extending through the top thereof and threadably engaging said upper body means.

4,452,307

REAMER

Gary B. Horton, 3160 Shed Rd., Bossier City, La. 71111

Continuation-in-part of Ser. No. 157,867, Jun. 9, 1980, Pat. No. 4,350,204. This application Oct. 29, 1981, Ser. No. 316,140
The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.
Int. Cl.³ E21B *37/02*
U.S. Cl. 166—174 **18 Claims**

1. A reamer for use with a wire line and impact device in the loosening of oil well tubing and casing comprising:

(a) a generally cylindrically-shaped housing having a hollow interior and an opening in the top thereof communicating with said hollow interior, and a tapered base;

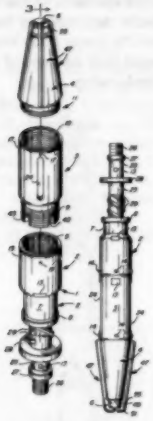
(b) a shaft extending through said opening and into said hollow interior, and external shaft threads on said shaft;

(c) stop means on the end of said shaft projecting into said hollow interior to limit the travel of said housing on said shaft;

(d) lock nut means disposed in said hollow interior of said housing in relatively movable relationship and a pair of lock nut lugs provided on the bottom face of said lock nut means, and lock nut threads internally provided in said lock nut means for threadable cooperation with said shaft threads on said shaft; and

(e) lug seat slots provided in spaced relationship in said

hollow interior beneath said lug nut means for registration with said lock nut lugs to effect rotation of said lock nut



means, said housing and said base on said shaft when a load is applied to said shaft by the impact device.

4,452,308

METHOD OF USING LOW MOLECULAR WEIGHT POLYALKYLENE GLYCOLS AS SACRIFICIAL AGENTS FOR SURFACTANT FLOODING

Helen K. Haskin, Houston, and Phillip E. Figdore, Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,128
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **9 Claims**

1. A method of recovering petroleum from a subterranean hydrocarbon formation which is penetrated by at least one injection well and at least one production well wherein chemicals are injected into the formation to sweep oil through the formation, which comprises:

injecting into the formation a solution containing about 0.01% to about 5.0% by weight of a sacrificial agent designed to prevent the loss to the formation of said injected chemicals,

said sacrificial agent selected from the group consisting of polyalkylene glycols and copolymers thereof having a molecular weight between about 100 and 1200.

4,452,309

METHOD AND MEANS FOR UNIFORMLY DISTRIBUTING BOTH PHASES OF STEAM ON THE WALLS OF A WELL

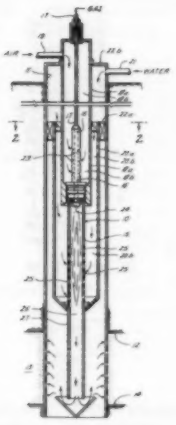
Richard H. Widmyer, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 13, 1982, Ser. No. 416,796
Int. Cl.³ E21B *43/24, 36/02*
U.S. Cl. 166—303 **4 Claims**

1. A method of injecting steam downhole from a steam generator positioned in a well at the top of a petroliferous reservoir, which comprises the steps of:

(a) positioning a bridge plug in the well at the bottom of the petroliferous reservoir; (b) piping the hot steam flow from the steam generator down to the botton of the petroliferous reservoir; and

(c) reflecting the hot steam flow upwardly from the bridge plug at the reservoir bottom to the reservoir top for saturating the complete reservoir surface with steam of uniform quality for improved enhanced oil recovery.

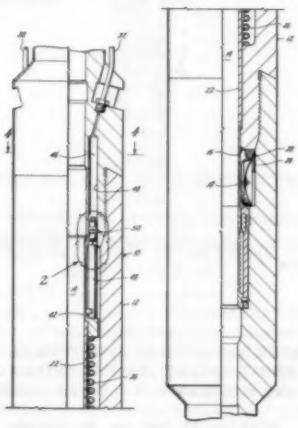


4,452,310

METAL-TO-METAL HIGH/LOW PRESSURE SEAL

Ronald E. Pringle, and William D. Eatwell, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Nov. 17, 1981, Ser. No. 322,318
Int. Cl.³ E21B *43/12*
U.S. Cl. 166—319 **8 Claims**



1. A metal-to-metal high/low pressure seal for use in a double acting piston and cylinder comprising,

first and second oppositely directed seats fixedly secured to the piston, said seats directed away from each other,

first and second metal seals, one of which is telescopically positioned on the piston on one side of the seats, and the other of which is telescopically positioned on the piston on a second side of the seats,

said first metal seal positioned adjacent the first seat and including an outwardly directed cup seal extending away from the first seat and engaging said cylinder, said first seal including a first sealing surface adapted to mate with

the first seat when pressure in the cylinder acts on the interior of the cup seal to cause the sealing surface to seat on the first seat and prevent pressure in the interior of the first cup seal to flow through the seat,

a second metal seal moving positioned adjacent the second seat and including an outwardly directed cup seal extending away from the second seat and engaging said cylinder, said second seal including a second sealing surface adapted to mate with the second seat when pressure in the cylinder acts on the interior of the second cup seal to cause the second sealing surface to seat on the second seat and prevent pressure in the interior of the second cup seal to flow through the second seat,

said first and second metal seals engageable with each other whereby when the sealing surface of one metal seal is seated on its mating seat the sealing surface of the other metal seal is unseated from its mating seat allowing fluid pressure to flow through the unseated seal and into the cylinder behind the outwardly directed cup seals, and

spring means between the piston and one of the metal seals yieldably urging said one seal against its mating seat.

4,452,311

EQUALIZING MEANS FOR WELL TOOLS

Steven C. Speegle, Flower Mound; Michael B. Vinzant, Carrollton, both of Tex., and Vinson D. Sullivan, Houma, La., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 423,151
Int. Cl.³ E21B *34/10, 43/12*
U.S. Cl. 166—324 **19 Claims**

1. A flow control valve for wells, comprising:

a. A tubular housing attachable to a well flow conductor, said housing having a valve seat therein;

b. a main valve closure in said housing movable relative to said valve seat between open and closed positions;

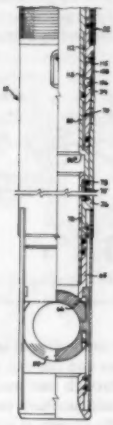
c. valve operator tube means in said housing movable longitudinally between upper and lower positions for moving said valve closure between open and closed positions;

d. equalizing valve means in said tubular housing including an equalizing valve closure movable between closed and open positions and having a portion thereof projecting into the bore of said tubular housing;

e. means on the exterior of said valve operator tube means for engaging said projecting portion of said equalizing valve means and moving said equalizing valve means to open position, comprising a lower recess and an upper recess separated from said lower recess by a land, said land being beveled at its upper and lower sides to provide upper and lower cam shoulders, said upper and lower recesses accommodating the projecting portion of said equalizing valve closure when said valve operator tube means is in its lower and upper positions, respectively, and said land engaging said equalizing valve closure and moving it to open position on downward movement of said valve operator tube means from its upper position;

f. upper and lower seal means sealing between said valve operator tube means and said housing above and below said equalizing valve means; and

g. equalizing port means through the wall of said valve operator tube means disposed above said upper seal means when said main valve closure is closed and said valve operator tube means is in its upper position, said equalizing port means being movable past said upper seal means on downward movement of said valve operator tube means to communicate said equalizing port means with said equalizing valve means before said means on the exterior



of said valve operator tube means engages and opens said equalizing valve means.

4,452,312

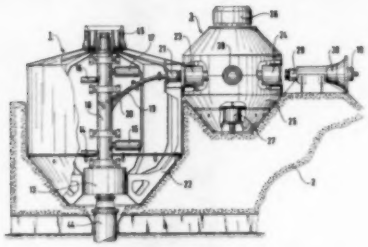
MODULAR UNDERSEA OIL PRODUCTION PLANT

Jean-Paul Roblin, Nantes, France, assignor to Alteliers et Chantiers de Chantiers de Bretagne-ACB, Nantes, France

Filed Feb. 23, 1982, Ser. No. 351,562
Claims priority, application France, Feb. 23, 1981, 81 03506
Int. Cl.³ E21B *43/013*
U.S. Cl. 166—339 **4 Claims**

1. A modular undersea oil production plant having at least one satellite unit and a central structure, a collector pipe conveying satellite products towards said central structure, said central structure having operating modules grouped together, means for removing said product from said operating modules within said central structure, the improvement wherein said satellite unit has a wellhead linked by a connector to the upper portion of a pipe in a drill hole, a raisable individual auxiliary module, said auxiliary module containing control and operation components, said satellite unit comprising a template bearing two distinct cavities whose shape is complementary to that of said wellhead and said auxiliary module, said cavities receiving said wellhead and said auxiliary module with their sidewalls in juxtaposition and facing each other, and wherein

the sidewall of said auxiliary module is in juxtaposition and faces the end of said collector pipe, said wellhead being linked by a connector internally thereof to an upper portion of a pipe in a drill hole beneath said template, and said auxiliary module containing control and operation components and being connected firstly to said wellhead by a first connector through said



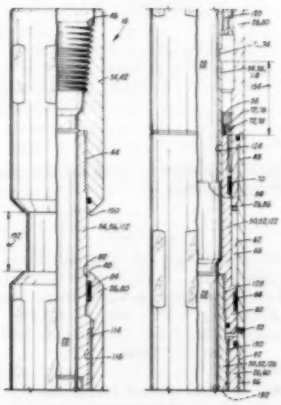
juxtaposed sidewall of said wellhead and said auxiliary module and secondly directly to said one end of said collector pipe by a second connector through said auxiliary module sidewall, and means carried by said auxiliary module controllable from the surface for controlling solely at said auxiliary module, the disconnection of said auxiliary module from the collector pipe and from the wellhead and for removing it from the template.

4,452,313

CIRCULATION VALVE

Michael E. McMahan, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 21, 1982, Ser. No. 370,518
Int. Cl.³ E21B *34/10, 34/12*
U.S. Cl. 166—373 12 Claims



1. A circulation valve, comprising:

a cylindrical housing having a central flow passage disposed therethrough, having a power port disposed through a wall thereof, and having a circulating port disposed through said wall below said power port;

an operating mandrel means, including an operating mandrel having a lower end telescopingly received in an upper end of said housing, and including an upper adapter attached to an upper end of said operating mandrel for connection of said circulation valve to a pipe string;

a valve sleeve slidably received in said housing and movable between an initial position blocking said valve port and an open position wherein said valve port is communicated with said central flow passage;

power mandrel means, including a power mandrel having a lower end attached to said valve sleeve and having an upper end with said lower end of said operating mandrel received therein, and having a power piston disposed on said power mandrel and sealingly received by an inner cylindrical surface of said housing, said power piston being above said power port and communicated therewith;

retaining means, operably associated with said power mandrel, said valve sleeve and said housing, for initially retaining said power mandrel in a lowermost position relative to said housing thereby retaining said valve sleeve in its said initial position until a pressure differential across said power piston exceeds a predetermined value;

locking means, operably associated with said operating mandrel and said power mandrel, for locking said operating mandrel to said power mandrel after said power mandrel moves said valve sleeve from its initial position; and

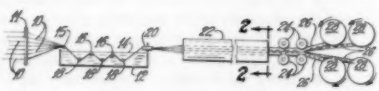
wherein said operating mandrel means is further characterized as a means for reclosing said circulation port when weight is set down on said circulation valve by said pipe string and for reopening said circulation port when weight is picked up from said circulation valve by said pipe string.

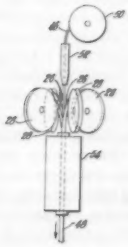
4,452,314

METHOD OF INSTALLING A REINFORCED THERMOSETTING RESIN SUCKER ROD ASSEMBLY COMPOSED OF PULTRUDED ARCUATE SECTIONS

Earl M. Zion, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 19, 1982, Ser. No. 369,442
Int. Cl.³ E21B *17/00*
U.S. Cl. 166—378 3 Claims



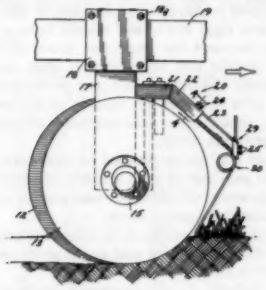


1. A method of installing sucker rod in a well comprising providing a plurality of spools each having a length of a pultruded reinforced thermosetting resin arcuate section wound thereon, assembling the arcuate sections into a rod by pulling them together from the spools with a pulling and assembling apparatus, and depositing the rod from the pulling and assembling apparatus down a well.

4,452,315
STRAW AND DEBRIS DEFLECTOR FOR SOIL OPENING APPARATUS

Guy J. Swanson, S. 4305 University, Spokane, Wash. 99206

Filed Sep. 20, 1982, Ser. No. 420,060
Int. Cl.³ A01C 5/06; A01B 49/06
U.S. Cl. 172—29 7 Claims



1. A straw and debris deflector used with a soil opening apparatus for untilled farmland to aid in the efficient opening of the soil by catching or deflecting straw and other debris from the path of a soil opener forming a part of said soil opening apparatus, comprising;

a bracket for mounting upon the soil opening apparatus at a point adjacent the soil opener, the bracket comprising:

(a) a first portion for rigid connection to the soil opening apparatus;

(b) a second portion rigidly connected to said first portion and extending forwardly and downwardly therefrom;

(c) a third portion telescopically and adjustably interconnected with said second portion, to allow extension of the third portion with respect to the second portion; the third portion also having a distal end opposite from interconnection with the second portion;

(d) fastening means for adjustably securing the relative position of the third portion with respect to the second portion; and

(e) an adjustable mounting means connected to the distal end of the third portion; and

a flexible tine adjustably mounted in said mounting means, the tine extending downwardly therefrom to define a distal end which is near ground level and close to the point where the soil opener breaks the ground open.

4,452,316
POWER HOE WITH RECIPROCATING BLADES IN SLIDING ENGAGEMENT WITH EACH OTHER

John W. Edwards, 1211 Florida Ave., Natrona Heights, Pa. 15065

Filed Aug. 19, 1981, Ser. No. 294,135
Int. Cl.³ A01B 1/10
U.S. Cl. 172—41 7 Claims

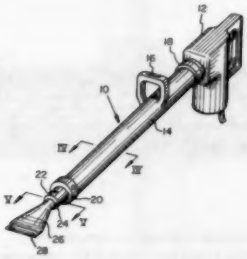
1. A power hoe comprising:

A. a housing accommodating a power source and associated means for reciprocating;

B. a tubular member extending from said housing;

C. a pair of shafts housed within the tubular member, each of said shafts connected at a first end to the reciprocating means; and

D. a pair of hoe blades adapted for weeding and breaking up soil, each hoe blade being substantially planar and comprising a shank and a cutting section, said cutting section being tapered at its distal end, said shank of each hoe blade connected to a second end of one of said shafts, said hoe blades positioned so that the cutting sections are in sliding engagement, said cutting sections being formed along their engaging surfaces so that the hoe blades are biased one against the other, said cutting section of said hoe blades being configured and formed so that in a first position the distal end of a first of said hoe blades extends beyond the distal end of the second of said hoe blades and transcends a plane thereof, in a second position said hoe blades are in matching side-by-side relationship with said distal ends in engagement, and in a third position said second hoe blade extends beyond the distal end of the first hoe blade and transcends a plane thereof, said hoe blades

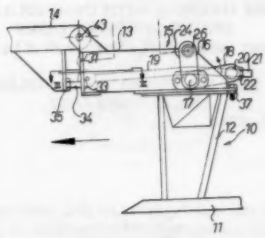


being constantly reciprocated between said first, second and third positions by said reciprocating means, and said shafts and blades being reciprocated in sliding engagement with each other and with respect to the tubular member by said reciprocating means, with the tapered distal end of each said hoe blade oriented perpendicular to the direction of reciprocation and extending linearly an extent greater than the cross sectional extent of each said shank so as to effect a ground penetrating action of said hoe blade cutting sections.

4,452,317
TRIP MECHANISM

Niklaus J. Moos, Burgdorf, Switzerland, assignor to Versatile Corporation, British Columbia, Canada

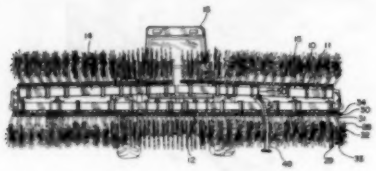
Filed Feb. 8, 1982, Ser. No. 347,232
Int. Cl.³ A01B 61/04
U.S. Cl. 172—266 4 Claims



1. A trip mechanism comprising a carriage, a frame mounted to said carriage by a first connection comprising a ball joint and a second and third connection, each of said second and third connections being pin and recess means, a pivotal member mounted on said frame, at least two arms extending from said pivotal member, a tension member connected between said carriage and one of said arms of said pivotal member, spring means between said frame and a second arm of said pivotal member and an adjustment means between said frame

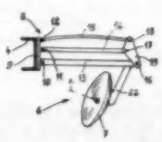
and said arm of said pivotal member connected to said tension member.

4,452,318
FOLDING FRAME IMPLEMENT WITH WING MOUNTED SUPPORT STAND
Charles Boetto, Naperville, Ill., assignor to International Harvester Co., Chicago, Ill.
Filed Oct. 22, 1981, Ser. No. 313,891
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—311 **7 Claims**



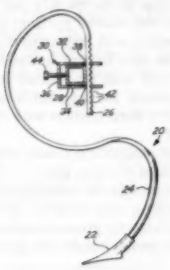
1. An agricultural implement comprising:
a frame having a tool bar adapted for connection to a tractor, said tool bar including a normally horizontal central section and at least one wing section pivotally connected to said central section about a generally horizontal axis for movement between a working position in general alignment with said central section and a folded storage position directly over said central section;
a hydraulic cylinder mounted on said central section;
means pivotally connected to said cylinder and to said wing section for moving said wing section between said working and storage positions upon cylinder actuation;
a plurality of ground working tools mounted on said central and wing sections;
a pair of spaced support means for said central section when said implement is in the storage position, said support means being located in front of the implement; and
a support stand mounted on said wing section, said support stand, in the folded storage position of said implement, extending from said wing section downwardly to the ground rearwardly of said implement and, in combination with said central section support means, independently supporting said implement and tools.

4,452,319
DISK HARROW WITH INDIVIDUALLY SPRING-MOUNTED DISKS
Paul S. Miguet, and Simon H. Miguet, both of La Pierre (Isere), France
Filed Aug. 27, 1981, Ser. No. 296,896
Int. Cl.³ A01B *61/04*
U.S. Cl. 172—573 **8 Claims**



1. A disk harrow comprising:
a frame adapted to be pulled along the ground in a normal travel direction and having at least one frame member;
a mount on said frame adapted to secure same to a three-point tractor hitch; and
a plurality of disk assemblies each including
an inner pivot part fixed on said frame and forming lower, middle, and upper horizontal axes transverse to said direction,
an outer pivot part spaced in said direction from said inner part and having respective lower, middle, and upper horizontal axes transverse to said direction and nondisplaceable relative to one another on said outer part,
respective rigid lower and middle links pivoted on said parts between the respective lower and middle axes, said middle link being shorter than said lower link, whereby the outer pivot part pivots about its middle axis as it is moved up relative to the inner pivot part with simultaneous displacement of said upper axes toward each other,
an upper leaf spring pivoted on said parts between said upper axes and of such a spring constant that it resists displacement of said upper axes toward each other with a generally constant force,
a harrow disk rotatable about a harrow axis transverse to said direction below said outer pivot part and the respective axes; and
means defining for the respective inner pivot part a respective vertical pivot axis for pivoting of the respective assembly through a limited arc about the respective vertical axis on said member.

4,452,320
ADJUSTABLE DANISH TINE
Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.
Filed Oct. 19, 1981, Ser. No. 312,907
Int. Cl.³ A01B *23/02*
U.S. Cl. 172—708 **1 Claim**



1. An adjustable Danish tine in combination with a farm implement tool bar comprising:
a Danish tine having a vertical tool bar attachment end, a curved connecting run and a soil piercing end, the vertical tool bar attachment end defining a vertical run;
a tool bar generally transverse to the vertical run for attachment with the vertical run, said vertical run extending upwardly and transforming into the curved connecting run, said curved connecting run extending forwardly over the tool bar;
a U clamp having two projecting legs connected by a crown, the legs including opposed openings for slidable receipt of the veritcal run, the clamp fitting over the tool bar with the legs straddling the tool bar, the crown opposed to one side thereof, the opposite side thereof being engaged by the vertical run which passes through the opposed openings; and
bolt means for adjusting the spacing of the crown from the tool bar and tightening the vertical run against the tool bar, said vertical run including a plurality of notches cooperative with the clamp for setting vertical adjustment

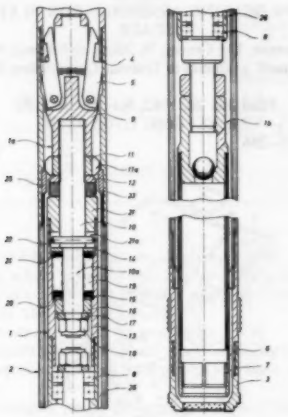
of the tine on the tool bar, said bolt means being positioned intermediate the curved connecting run and the tool bar.

4,452,321

DEVICE IN CORE BARRELS

Sune W. Eriksson, Spånga, Sweden, assignor to Craelius AB, Bromma, Sweden

Filed Oct. 5, 1981, Ser. No. 308,527
Claims priority, application Sweden, Oct. 10, 1980, 8007130
Int. Cl.³ E21B *25/00*
U.S. Cl. 175—46 **6 Claims**



1. A device in core drilling for indicating when a core barrel located in a hollow drill rod is no longer capable of accommodating a further quantity of core material, comprising a valve member, the core barrel including a part movable axially of the drill rod, means for mounting the valve member for operation by movement of the core barrel movable part axially of the drill rod, means on the drill rod for cooperating with the valve member to define a drilling fluid flow passageway therebetween, movement of the core barrel movable part varying the fluid flow passageway, means separate from the valve member for stopping the axial movement of the core barrel movable part, and means for permitting adjustment of the position of the stop means to permit a preselected desired amount of drilling fluid to flow through the passageway between the valve member and the means on the drill rod for cooperating with the valve member when the core barrel movable part and valve member are stopped.

4,452,322

DRILLING DEVICE FOR DRILLING A CORE IN DEEP DRILL HOLES

Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Continuation of Ser. No. 137,174, Apr. 4, 1980, abandoned. This application May 13, 1982, Ser. No. 377,740
Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919007
Int. Cl.³ E21B *4/02, 25/00*
U.S. Cl. 175—107 **12 Claims**

1. A drilling device for drilling a core in deep well drilling holes consisting of an end connectable with the drill hole end of a pipe line, a downhole motor operated by the drill flushing fluid and a core drill which comprises a drill bit attached to the rotor of the downhole motor supported by an outer sleeve and an inner core sleeve arranged coaxially with said outer sleeve, which sleeves define an annular space; an axial flow path for the drill flushing fluid being formed through the drilling tool from the inlet of the downhole motor and being provided with a check valve opening from the inner space of the core sleeve to the environment, characterized in such a way that the core sleeve is connected by way of an inlet channel with the flow

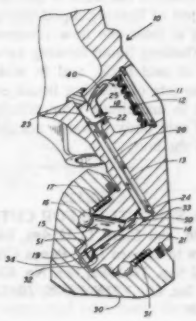
path of the drill flushing fluid and a flow path is provided in the direction for flushing to the drill hole bottom and including a stop valve for selectively stopping the flushing of the core sleeve.

4,452,323

VALVE ASSEMBLY FOR DRILL BIT LUBRICATION SYSTEM

Jeffery E. Daly, Houston, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed Jan. 11, 1982, Ser. No. 338,768
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—229 **5 Claims**



1. A rolling cutter drill bit having at least one downwardly extending lug member with a rolling cutter rotatably mounted by bearing means on said lug member, said drill bit having a lubricant reservoir formed therein and lubricant passage means therein communicating said reservoir with said bearing means; and further comprising divider means in said passage arranged to form said passage into two separate flow channels, with at least one check valve in at least one of said channels arranged to allow flow therethrough in only one direction, said divider means comprising a relatively thin reed adapted for snugfitting relationship in said passage means spanning said passage means near the central axis thereof, and said check valve comprising an arcuate flexible tang on said reed, projecting downwardly

therefrom at an angle of less than about 90 degrees from the plane of said reed and arranged for relatively fluid-tight engagement with the wall of said passage means.

4,452,324

ROTARY DRILL BIT

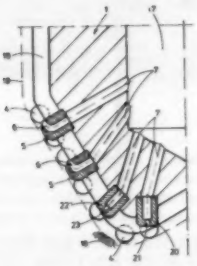
Rainer Jürgens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Oct. 19, 1981, Ser. No. 312,563

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039633

Int. Cl.³ E21B *10/66*

U.S. Cl. 175—393 1 Claim



1. A rotary drill bit, particularly for deep-well drilling, comprising a body having a gauge region, a cutting surface which is defined by projecting cutting members having a face and a cutting edge supported at the outer periphery of the body between a central region at the bottom of the bit and a lateral region between the central region and the gauge region on supporting members and nozzle passages through which flushing liquid can flow over and around said bit upwardly to the top of the drill hole and which nozzle passages have outlets spaced about the cutting surface, said outlets being formed so as to direct fluid towards the faces of the cutting members and which gives the jets of flushing liquid emerging therefrom an alignment having at least one flow component facing in the direction of the flushing liquid flowing upwardly around the outer periphery of said body, and in which said one flow component of the jets of flushing liquid emerging from the nozzles increases in magnitude from nozzles disposed in the central region of said body towards nozzles provided in the lateral regions of the body.

4,452,325

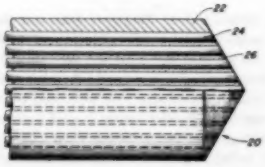
COMPOSITE STRUCTURE FOR CUTTING TOOLS

Frederick J. Radd, and Elard L. Haden, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Sep. 27, 1982, Ser. No. 424,947

Int. Cl.³ E21B *10/00, 10/52*

U.S. Cl. 175—410 6 Claims



1. An abrasive impact cutting tool comprising a bundle of elongated, parallel filamentary cemented metal carbide rods and a tubular metal collar surrounding said bundle, said bundle being in a tight-fitting, close-packed relationship of said rods, each of said rods having an outer surface, a portion of said outer surface being in abutment against a portion of the outer surfaces of a plurality of adjacent rods, said bundle being shrink-fitted within said collar.

4,452,326

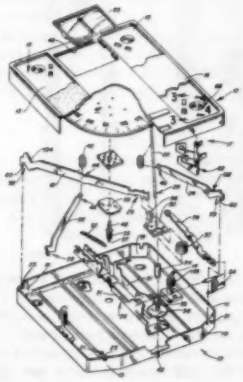
CORNER BEARING ASSEMBLY FOR PLATFORM SCALE

Stan B. Hanssen, Las Cruces, N. Mex., and James R. Hanssen, Sligo, Ireland, assignors to Tricolor Corporation, Las Cruces, N. Mex.

Filed Jul. 26, 1982, Ser. No. 402,054

Int. Cl.³ G01G *21/02, 21/08*

U.S. Cl. 177—256 9 Claims



1. In a platform-type scale comprising a base, a plurality of counterbalanced levers supported on the base, a weight-sensing mechanism operatively engaged with and responsive to movement of the levers, a cover with an upper platform mating with and shiftable vertically relative to said base, said cover depressing under an applied weight to pivot the levers which in turn actuate the weight-sensing mechanism to indicate the magnitude of the applied weight, the improvement comprising a floating corner bearing assembly associated with the cover for distributing a force imparted on said cover to said levers, said corner bearing assembly comprising:

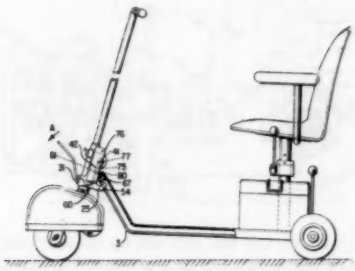
a downwardly facing dimple formed integrally with said platform adjacent the end of each said lever, each said dimple having tapered walls extending away from an apex;

a bearing member having a rounded nose disposed within said dimple and a downwardly facing knife edge disposed transversely of the longitudinal extent of and engageable with said levers, said rounded nose being guided by said tapered walls consistently into alignment with said apex;

at least one arm extending from said bearing member; and

means associated with said cover and loosely engaging said arm and retaining said bearing member upon said cover in a generally upright position relative to the cover platform and said nose within said dimple for floating movement of said bearing member relative to said cover such that said knife edge aligns relative to said levers under an unevenly applied weight on said cover to afford accurate weight readings, said engaging means providing non-binding support of the assembly to the cover.

4,452,327
MOTORIZED VEHICLE
Donald J. Mowat, and H. Michael Doman, both of P.O. Box 1031, Kitchener, Ontario, Canada N2G 4E3
Filed Apr. 3, 1981, Ser. No. 250,140
Claims priority, application Canada, Nov. 6, 1980, 364194
Int. Cl.³ B62D *27/06*; B62K *5/06*
U.S. Cl. 180—11 **61 Claims**



1. A vehicle which can be disassembled into a forwardly extending wheel assembly and a rearwardly extending trailer by means of a connecting assembly disposed therebetween, the connecting assembly comprising:

latch means provided on said trailer;

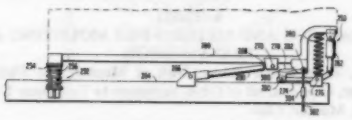
hook means provided on said wheel assembly to be mutually engageable with said latch means, said hook means including;

(a) engaging means to engage and lift said latch means and having formed thereon shoulder means to cause the progressive disengagement of said engaging means from said latch means during the lifting thereof;

(b) support means to engagedly receive said latch means upon disengagement thereof from said engaging means to secure coupling of said wheel assembly and said trailer together; and

(c) lever means actuatable to cause disengagement between said latch means and said support means.

4,452,328
CABTILT SYSTEM WITH SYNCHRONIZING VALVE
Tone Oudelaar, Oldenzaal, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.
Filed Nov. 20, 1981, Ser. No. 323,373
Int. Cl.³ B62D *23/00*
U.S. Cl. 180—89.14 **8 Claims**



5. In a motor vehicle comprising:

(a) a chassis member;

(b) a cab member mounted on said chassis member for pivotal movement about an axis transverse to the longitudinal axis of said chassis member from a lowered first position to a raised second position;

(c) two transversely spaced tilt cylinders operatively connected to said chassis member and to said cab member to pivot said cab member back and forth between its first and second positions;

(d) a linkage between said cab and said chassis for sensing a cocking of said cab member due to one of said tilt cylinders having extended or retracted more rapidly than the other during raising or lowering of said cab members and for generating a signal indicative thereof; and

(e) means for reducing the flow of hydraulic fluid to said one of said tilt cylinders in response to said signal, the improvement wherein said linkage comprises:

(1) a sensing rod mounted on said cab member for pivotal movement therewith;

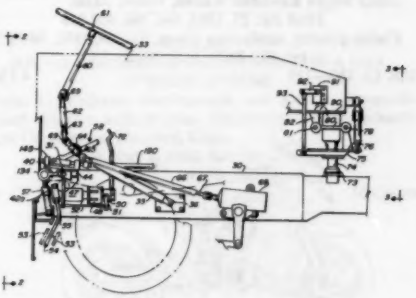
(2) a linkage rod operatively connected to said means such that motion of said linkage rod in one direction from a central neutral position causes said means to reduce the flow of hydraulic fluid to one of said tilt cylinders and motion of said linkage rod in the other direction from its central neutral position causes said means to reduce the flow of hydraulic fluid to the other of said tilt cylinders; and

(3) a bearing

(i) which slidably receives said sensing rod and

(ii) which is pivotally mounted on said linkage rod such that, if said tilt cylinders extend or retract in unison, said sensing rod slides freely in said bearing, said bearing pivots freely on said linkage rod, and said linkage rod does not move from its central neutral position, but, if one of said tilt cylinders extends or retracts more rapidly than the other, causing said sensing rod to cock, in turn causing said bearing to cock and to translate, said linkage rod does move from its central position, causing said means to reduce the flow of hydraulic fluid to said one of said tilt cylinders.

4,452,329
SUSPENSION FOR A TRUCK TILT CAB
Thomas R. Stone, Hayward, and Roger P. Penzotti, Livermore, both of Calif., assignors to Paccar Inc., Bellevue, Wash.
Filed Dec. 13, 1982, Ser. No. 449,265
Int. Cl.³ B62D *27/00*
U.S. Cl. 180—89.15 **43 Claims**



1. A tilt-cab truck comprising:

a main frame supported on wheels through a primary suspension system,

a tilt cab having main pivot means,

a pair of front suspension bell cranks, one on each side of said truck, each having a first pivotal connection to said main pivot means and having an arm extending substantially horizontally rearward therefrom to a second pivotal connection to said main frame and having a crank arm extending substantially perpendicularly down from said arm at said second pivotal connection,

power cylinder means between and connected to said cab and said frame at pivot means that are both spaced away from said main pivot means,

anti-roll means rigidly connected at each end to said bell crank and extending down therefrom and then laterally across to the other side of said truck,

a pair of front air spring means positioned substantially horizontally and secured to said main frame at one end with said crank arm bearing on its other end,

first leveling means for maintaining cab height relative to said frame connected to said front air spring means and to a source of air pressure therefor,

a pair of lower latch assemblies each secured to said main frame near the rear of said cab,

a pair of upper latch assemblies, each releasably secured to a said lower latch assembly,

a pair of rear link means extending horizontally, each pivotally connected at one end to a rear portion of said cab and at another end to a said upper latch assembly,

a pair of rear air spring means each mounted on a said upper latch assembly and having an upper end bearing against said cab,

second leveling means for each said rear air spring means connected to said source of air pressure for maintaining said cab height relative to said frame,

a pair of front damper-snubbers each adjacent to said main pivot means and operatively interposed between said cab and said main frame, and

a pair of rear damper-snubbers each interposed between said cab and said upper latch assembly,

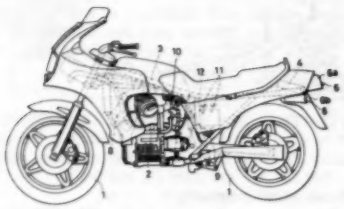
each said damper-snubber comprising hydraulic cushioning means for preventing bottoming out at each end of its stroke.

4,452,330

ELECTRICAL APPARATUS IN MOTORIZED TWO-WHEELED VEHICLE

Youji Matsuyama, Higashiyamato, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1982, Ser. No. 402,348
Claims priority, application Japan, Jul. 29, 1981, 56-117743
Int. Cl.³ B62J *5/18*; H02B *1/04*
U.S. Cl. 180—219 **4 Claims**



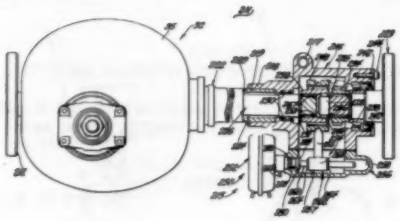
1. An electrical apparatus in a two-wheeled vehicle having a body, front and rear wheels mounted on said body and an internal combustion engine mounted on said body between said wheels, said electrical apparatus comprising an electronic control circuit means for controlling the operation of said engine, a first wiring harness means coupling said circuit means to said engine and extending from said circuit means to said engine along one side of said body, an electric power supply, at least one electric appliance, and a second wiring harness means, coupling said at least one appliance to said power supply, said second harness means extending along the other side of said body whereby said first and second harness means are separated such that noise from said second harness means does not affect said first harness means.

4,452,331

VEHICLE AXLE

Royston C. Lunn, Ann Arbor; J. Edwin MacAfee, Grosse Ile; Robert C. Grabowski, Dearborn Heights; Dennis N. Renneker, Troy, and John M. Winkler, Temperance, all of Mich., assignors to American Motors Corporation, Southfield, Mich.

Filed Nov. 13, 1980, Ser. No. 206,332
Int. Cl.³ B60K *17/34*
U.S. Cl. 180—247 **8 Claims**



1. An axle for a four-wheel drive vehicle of the type which has a four-wheel drive mode and a two-wheel drive mode wherein in the two-wheel drive mode the wheels associated with the axle rotate independent of the vehicle drive train and in the four-wheel drive mode the wheels are coupled to the drive train in driven relation therewith, the axle comprising:

a differential;

a first axle shaft interconnected between the differential and one of the wheels;

a second axle shaft adapted for interconnection between the differential and the other of the wheels, at least one of said axle shafts having an inner section and an outer section;

coupling means associated with said one of said axle shafts for selectively coupling the outer and inner sections thereof;

control means, associated with said coupling means and responsive to a control signal of a first character for actuating the coupling means to couple the inner and outer axle shaft sections for operation of the axle in four-wheel drive mode, and responsive to a control signal of a second character for actuating the coupling means to decouple the inner and outer axle shaft sections for operation in the two-wheel drive mode; and

signaling means responsive to the position of the coupling means, to provide a position indicating signal for feedback in controlling the condition of a transfer case in moving between the two-wheel drive mode and the four-wheel drive mode.

4,452,332

APPARATUS AND METHOD FOR MOUNTING A TRANSMISSION

David T. Ping; Edwin Reeve, both of Mentor, and Philip S. Webber, Chardon, all of Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Jul. 14, 1982, Ser. No. 398,051
Int. Cl.³ B60K *17/16*
U.S. Cl. 180—312 **15 Claims**

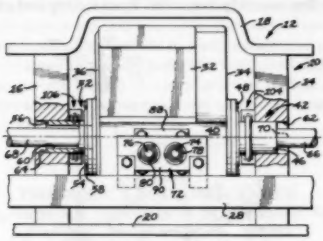
1. A mounting arrangement (42,52,72) for connecting a transmission (32) having a first (34) and second side (36) and a first (38) and second end (40) to a vehicle (12) having a frame (10) comprising:

said frame (10) having first and second spaced apart sides (14,16) and upper and lower spaced apart plates (18,20) connected to each of said first (14) and second (16) sides, said first and second sides (14,16) each having a bore (62,64) therethrough;

a first trunnion (42) having a flange (44) and a sleeve (46) connected to said flange (44), said flange (44) being releasably connected to said transmission first side (34) and said

sleeve (46) being slidably disposed in the bore (62) of said frame first side (14);

a second trunnion (52) having a flange (54) and a sleeve (56) connected to said flange (54), said flange (54) being releasably connected to said transmission second side (36) and said sleeve (56) being slidably disposed in the bore (64) of



said frame second side (16), said first and second sleeves (46,56) defining a transverse trunnion axis (70); and

a guide means (72) for slidably connecting said transmission second end (40) to said frame (10) at a location spaced from said first and second trunnions (42,52) and guiding said transmission (32) for movement in directions substantially normal to said transverse trunnion axis (70).

4,452,333

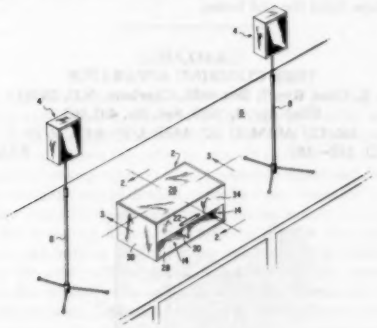
SPEAKER SYSTEM

Hartley D. Peavey, and Robert M. O'Neill, both of Meridian, Miss., assignors to Peavey Electronics Corp., Meridian, Miss.

Filed May 28, 1982, Ser. No. 383,336

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—144 **12 Claims**



1. A speaker system comprising:

(a) a first cabinet comprising an enclosure forming a first cavity having at least one speaker therein, said speaker having a first predetermined frequency range, said cabinet comprising at least a second enclosure forming at least one slot communicating with said speaker and containing a predetermined volume of air, and

(b) at least one auxiliary speaker having a second predetermined frequency range which is different from said first frequency range, and contained in a second cabinet which has exterior dimensions such that said second cabinet will fit within said slot; whereby said auxiliary speaker may be stored in said slot.

4,452,334

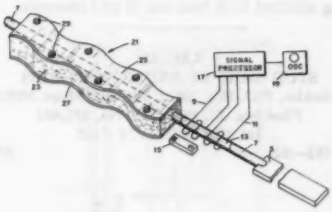
TUNABLE DAMPER FOR AN ACOUSTIC WAVE GUIDE

Samuel C. Rogers, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1982, Ser. No. 435,797

Int. Cl.³ G10K *11/00*

U.S. Cl. 181—175 **5 Claims**



1. An acoustic damper for an acoustic waveguide comprising:

a mass of metal wool surrounding an area of said waveguide in which acoustic signals are to be damped;

first and second metal plates disposed over said wool along the axis of said waveguide in said area to be damped on opposite sides of said waveguide forming a sandwiched assembly with said wool surrounding said waveguide, each of said plates having a generally sinusoidally bent pattern along their length the period of which is approximately equal to the wavelength of the acoustic signal to be damped and oriented in an in-phase relationship along their length; and

means for selectively urging said plates toward each other to compress said wool against said waveguide so that said waveguide is subjected to alternating opposing lateral bending stresses at 180° intervals along its length in said area in which said acoustic signals are to be damped.

4,452,335

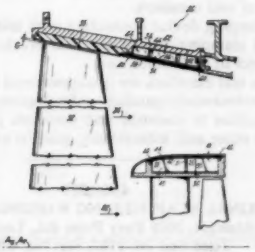
SOUND ABSORBING STRUCTURE FOR A GAS TURBINE ENGINE

Douglas C. Mathews, Marlborough, and Aldo A. Peracchio, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 3, 1982, Ser. No. 374,469

Int. Cl.³ B64D *33/02*

U.S. Cl. 181—214 **10 Claims**



1. A stator structure for attenuating the noise of an axial flow gas turbine engine which extends circumferentially about an axis of symmetry of the engine and bounds an annular flow path for working medium gases, comprising:

a casing element for confining the working medium gases to the working medium flow path;

a permeable wall element which is attached to the casing element and which is spaced radially from the casing element leaving a cavity therebetween bounded by the permeable wall element and by said casing element, the cavity being in fluid communication through the permeable wall element with the working medium flow path; and

a plurality of partitions extending between the casing element and the wall element, at least one of which interrupts the circumferential continuity of the cavity, each partition being attached to at least one of said elements.

4,452,336

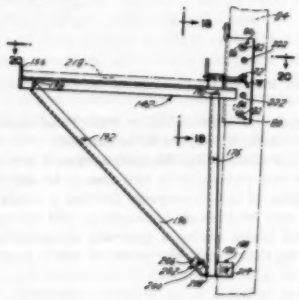
STUD GRIPPER AND ACCESSORIES

Jack R. Sickler, P.O. Box 20803, Billings, Mont. 59104

Filed Sep. 15, 1980, Ser. No. 187,461

Int. Cl.³ E04G *3/14, 5/06*

U.S. Cl. 182—82 **37 Claims**



1. A gripping device comprising:

a. a first member and a second member;

b. a first means uniting said first member and said second member;

c. said first member and said second member being capable of moving with respect to each other;

d. when said first member and said second member are, substantially, parallel, a second means, operatively, connecting with one of said members to hold in a fixed position said first member and said second member;

e. a third means on one of said members and directed toward the other member, when said members are facing each other, for making an indentation into an article between said members and to assist in holding said gripping device in position on said article;

f. said second means comprising a bracket connecting with one of said members;

g. a clamping device connecting with said bracket;

h. said clamping device and said bracket moveable with respect to each other; and,

i. when said members are juxtapositioned to each other and are, substantially parallel, said clamping device moving to a position to maintain said members juxtapositioned to each other and, substantially, parallel to each other.

4,452,337

SECTIONAL SCAFFOLDING RAISING APPARATUS

Louis E. Atzinger, 2608 Foxy Poise Rd., Louisville, Ky. 40220

Filed Sep. 30, 1982, Ser. No. 429,759

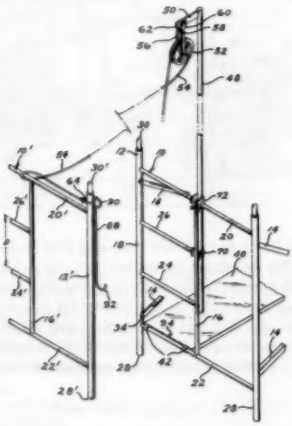
Int. Cl.³ B66C *11/04;* **E04G** *0/1*

U.S. Cl. 182—178 **8 Claims**

1. In a sectional scaffolding assembly comprising multiple levels of interlocking scaffolds, each scaffold having a pair of end frames supported by a pair of side cross braces, each end frame having top and bottom horizontal rails and an intermediate upright with a plurality of vertically-spaced rungs supported on at least one side thereof, and a platform or deck adapted to be suspended from the rails or rungs of the opposite end frames; the invention comprising:

a. a portable, vertical hoisting pole or mast having vertically-spaced clamp members located adjacent the lower end thereof and adapted for coupling with both the vertically-spaced rungs of an end frame and the intermediate upright;

b. a pulley assembly suspended from the top end of the mast



and including a long rope acting with the pulley, one end of the rope being fitted with a loop, where the loop carries an elongated push rod having a hook formed on its free end;

c. where the loop of the rope is adapted to slip over a top corner pin of the end frame to be raised, while the said push rod is adapted to be used for raising the loop of the rope off of the corner pin and thereby disconnecting the rope from the end frame.

4,452,338

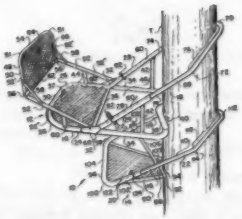
TREE CLIMBING APPARATUS

Reese E. Untz, Rte. 7, Box 6655, Charlotte, N.C. 28213

Filed Apr. 1, 1983, Ser. No. 481,467

Int. Cl.³ A01M *31/02;* **A45F** *3/26;* **A47C** *9/10*

U.S. Cl. 182—187 **9 Claims**



1. An apparatus for climbing a tree or like columnar member comprising seat frame means for disposition about a tree for selective engagement therewith for supporting a user's main body and selective disengagement therefrom for sliding vertically therealong, said seat frame means including a main seat frame member for engaging the tree at one side thereof, a seat bracing frame member for engaging the tree at the opposite side thereof, and means for selectively affixing said main seat frame member and said seat bracing frame member in disposition about the tree, said main seat frame member including

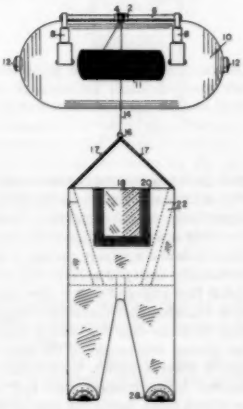
platform brace means having a supporting seat surface and adapted to engage the one side of the tree to extend therefrom with said seat surface substantially horizontally disposed, and seat back means having a supporting back surface and movably mounted to said platform brace means for selective disposition in a first position with said back surface adjacent said seat surface outwardly from said tree and generally perpendicular to said seat surface for use of said seat surface as a seat and use of said back surface as a seat back for seating of said user's main body facing toward the tree and in a second position with said back surface spaced from and generally horizontal and parallel to said seat surface for use of one of said seat surface and said back surface as a seat for seating of said user's main body facing away from said tree.

4,452,339

EMERGENCY BODY DESCENDER

Charles A. Raymaker, 2300 Leighton Ct., Richmond, Va. 23233

Filed May 28, 1982, Ser. No. 383,091
Int. Cl.³ A62B 1/10
U.S. Cl. 182—232 **3 Claims**



1. Apparatus for emergency descent from a building, comprising a coil of cable, means at one end of the cable for attaching a harness, means attached to the other end of the cable and rotatable to permit the cable to unwind to lower the harness, means for braking rotation of said rotatable means and thereby controlling the rate of descent of the harness, means for mounting the rotatable means and braking means, means for anchoring the mounting means to a building so that the rotatable means and braking means remain where they are anchored while the cable is unwound to lower the harness, including means for manually rewinding the cable and means responsive to cable tension induced by weight in the harness to prevent rewinding of the cable while the harness is occupied and descending.

4,452,340

MULTI-STAGE VEHICLE HOIST

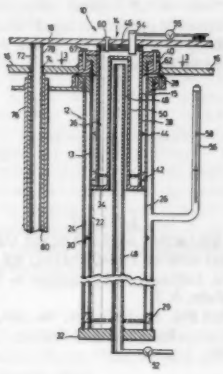
Jack F. Hernick, 6 Carousel Ct., Toronto, Ontario, Canada (M6B 3M1), and Vincent G. Lamont, 2093 Emerald Crescent, Burlington, Ontario, Canada L7R 1N2

Filed Sep. 24, 1980, Ser. No. 190,346
Int. Cl.³ B66B 9/20
U.S. Cl. 187—8.43 **7 Claims**

1. A car hoist comprising a first elevator including a first piston having a skirt, a piston head locating intermediate the axial ends of said skirt to define a chamber thereabove, a second elevator comprising a second piston within said chamber, said piston of said second elevator having a head adjacent the upper end thereof;

a tubular member closed adjacent the upper end thereof passing upwardly through the head of said first piston in sealed relation therewith to approach the head of the second piston when said second piston is in its retracted position;

a stand pipe for supplying pressurized fluid to said first



elevator, said stand pipe passing upwardly within said first piston through the head thereof to be loosely telescoped by said tube;

vehicle frame support means and wheel support means, one said support means being mounted on said first elevator, the other said support means being mounted on said second elevator;

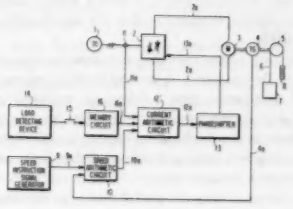
and means for separately supplying pressurized fluid to said second elevator for the actuation thereof.

4,452,341

LOAD CHANGE RESPONSIVE ELEVATOR SPEED CONTROL APPARATUS

Toru Tanahashi, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,116
Claims priority, application Japan, Feb. 12, 1981, 56-19271
Int. Cl.³ B66B 1/30
U.S. Cl. 187—29 R **1 Claim**



1. An elevator speed control apparatus, comprising:

(a) a DC elevator drive motor,

(b) means for controlling the running speed of the motor and attendantly the running speed of an elevator cage driven thereby, said means including:

(1) a speed control system constituting a main loop and having a relatively slow response time, and

(2) current control system constituting a minor loop and having a relatively fast response time,

(c) a load detecting device (14) for detecting the load in said cage, and

(d) means for reducing acceleration-deceleration bumps when passengers exit or enter the cage before it comes to a complete halt,

(e) said bump reducing means comprising a memory circuit (16) for storing the output of said load detecting device, and switch means (15) connected between said load detecting device and said memory circuit, and

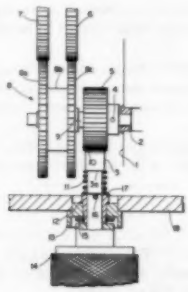
(f) wherein said switch means comprises a floor relay contact maintained opened during the running of the cage, and maintained closed from just before the cage reaches a desired floor up to just before the cage is started again.

4,452,342

SHAFT BRAKING MECHANISM UTILIZING NON-PERMANENT DEFORMING BRAKE SHOE

Arnold Schindel, Fairlawn, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Feb. 18, 1982, Ser. No. 349,874
Int. Cl.³ B62C 7/02
U.S. Cl. 188—69 2 Claims



1. A braking mechanism for a moveable shaft having an input gear and an output gear for transmitting torque therebetween, said shaft being subject to vibration from the gears, the mechanism comprising:

first braking means including a brake wheel having permanent corrugated formations thereon and fixedly connected to the shaft;

second braking means movably mounted in adjacent proximity to the first means, the second braking means including:

a pad of non-permanent deformable material capable of developing formations that complement the permanent formations of the brake wheel upon contact therebetween and causing mechanical locking of the shaft until the pad is withdrawn from contact,

a plunger for mounting the pad thereon for movement of the pad with the plunger between an on position and an off position; and

a spring member for exerting an adjustable biasing force against the plunger to maintain contact between the corrugated brake wheel and the pad and to deform the pad in the on position and to permit manual withdrawal of the pad and plunger in the off position; and

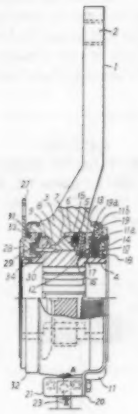
wherein the pad is fabricated from polyurethane to permit a selective deformation of the pad by a selected unit pressure from a reaction of the corrugated brake wheel.

4,452,343

ROAD BRAKE SLACK ADJUSTER

Geoffrey R. Tregoning, Chippenham, England, assignor to Westinghouse Brake and Signal Company Ltd., Chippenham, England

Filed Nov. 24, 1981, Ser. No. 324,483
Int. Cl.³ F16D 65/56
U.S. Cl. 188—79.5 K 16 Claims



1. An automatic slack adjuster mechanism including an input member pivotable in opposite directions about an axis to apply and release respectively a brake-applying force; an output member also pivotable in opposite directions about the axis to transmit said force to brake applying means; a force transmitting member threadedly engaged around the output member and having a clutch face engaged with a corresponding clutch face on the input member, the threaded engagement of the force transmitting member and the output member being of such a sense that pivotal movement of the input member in a direction to apply a brake-applying force tends, by the force transmitting member being rotated with the input member through the two clutch faces, further to engage the two clutch faces and thereby move the input member in a first axial direction with the force transmitting member, and pivotal movement of the input member in the opposite direction to release the brake-applying force tends, by the force transmitting member being rotated with the input member through the two clutch faces, to release the two clutch faces to permit the input member to move in an opposite axial direction with the force transmitting member; and brake-clearance determining means having a first part with respect to which the output member is rotatable about the axis and a second part normally engaged with the output member through a stepless clutch of which one part is located with respect to said second part and of which the other part of the clutch is located with respect to the output member; the stepless clutch being disengaged by movement of the input member in the first axial direction and being retained engaged by movement of the input member in the opposite axial direction.

4,452,344

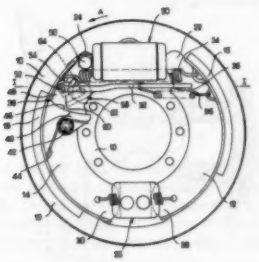
DRUM BRAKE

Gérard Muscat, Blanc-Mesnil, France, assignor to Societe Anonyme DBA, Paris, France

Filed Jan. 11, 1982, Ser. No. 338,697
Claims priority, application France, Jan. 30, 1981, 81 01835
Int. Cl.³ F16D 65/58
U.S. Cl. 188—79.5 GT 10 Claims

1. A drum brake comprising a drum, a supporting plate, two brake shoes slidingly supported on said supporting plate, brake

shoe friction elements capable of being brought into frictional engagement with said drum, brake motor means interposed between two first adjacent ends of said shoes and for urging the shoes and frictional elements into engagement with said drum, a strut positioned relative to said shoes, a wear compensating device associated with one of said shoes and for maintaining said shoes at a relative distance which increases as wear of the friction elements increases, the strut engaging the wear compensating device to actuate the device when the shoes and friction elements are urged into engagement with the drum,



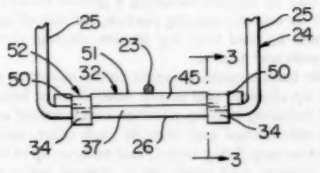
and a strut positioning mechanism for maintaining the strut at an approximately constant distance from the brake motor means, said mechanism comprising a plane inclined relative to the strut and connected to one of said strut and one shoe and a projection connected to the other of said strut and one shoe, whereby displacement of the shoes by the motor means and actuation of the wear compensating device by the strut effect engagement of the inclined plane with the projection to displace the strut and maintain said approximately constant distance of the strut from said brake motor.

4,452,345

BRAKE SYSTEM FOR RAILWAY VEHICLE

Julien C. Mathieu, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Jul. 23, 1981, Ser. No. 286,139
Int. Cl.³ F16D *65/02*; B61H *13/36*
U.S. Cl. 188—207 **3 Claims**



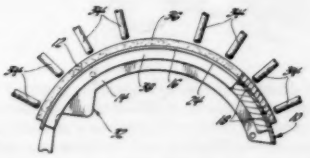
1. In a brake system for a railway vehicle comprising, a brake rod member, a support structure for said brake rod member, said support structure having a horizontally disposed supporting member which is adapted to support said rod member for sliding movements thereon, and an antifriction component made primarily of an ultra high molecular weight polymeric material and carried by one of said members, said component serving to minimize wear and enable antifriction movements during said sliding movements, the improvement in which said component comprises a solid strip portion being a separate elongate strip of substantially rectangular cross-sectional configuration; and said system further comprises self-contained clip means for locking said strip portion against said supporting member, said clip means comprising a pair of resilient parallel legs and a locking projection extending from the outer end portion of each parallel leg toward the other parallel leg, said clip means comprising at least one substantially U-shaped clip having a bight with said pair of parallel legs extending outwardly from said bight, said clip being disposed with its bight against a top surface of said strip and with said parallel legs also embracing opposed vertical surfaces of said strip which are disposed in vertical alignment with said opposed surfaces of said supporting member and being disposed with said parallel legs embracing opposed vertical surfaces of said supporting member and with said projections snap locked beneath a bottom surface thereof; each locking projection having a cam surface and a locking part, each cam surface being adapted to urge its associated leg outwardly from an associated vertical surface during installation of said strip portion against said supporting member and once its locking part clears said bottom surface the associated leg snaps inwardly toward the other leg of said pair with the locking part beneath said bottom surface, each locking projection being defined as an angled end portion adjoining the terminal end of each leg as an integral part thereof, said angled end portion having an outside surface defining its cam surface and a terminal tip defining its locking part; said elongate strip having a cut-out slot therein extending inwardly from a top surface thereof and said U-shaped clip has the bight thereof disposed in nested relation with said slot.

4,452,346

BRAKE SHOE AND LINING ASSEMBLY

James L. Stukenborg, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1982, Ser. No. 356,176
Int. Cl.³ F16D *69/04*
U.S. Cl. 188—250 G **4 Claims**



1. A brake shoe and brake lining assembly comprising:
a brake shoe and a brake lining body positioned in side-by-side surface engaging relationship, said brake lining body having a first surface engaging said brake shoe and a second surface for friction braking, said brake shoe having wall means formed therein defining a series of openings and said brake lining body being preformed to conform to said brake shoe and covering said openings, said brake lining body having portions displaced within and from said lining body from said second surface into and filling said openings after said brake lining body has been preformed and positioned in side-by-side surface engaging relationship to said brake shoe in a manner to cover said openings, the displaced portions of said brake lining body and the wall means of said brake shoe openings cooperating to mechanically secure said brake lining body to said brake shoe.

4,452,347

BRAKE SPIDER

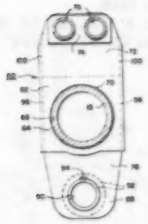
Leonard C. Dozier, Birmingham, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 259,262, Apr. 30, 1981, abandoned.
This application Nov. 10, 1982, Ser. No. 440,769
Int. Cl.³ F16D *51/22*
U.S. Cl. 188—330 **4 Claims**

1. A spider for a brake to be utilized at a cylindrical wheel

end portion of a heavy duty truck or trailer axle, said brake including a drum mounted for rotation with a wheel at said wheel end portion and a pair of brake shoes including a dual web support structure centrally located thereon, one end of said dual web support structure of each said brake shoes being supported by pivot pin means and the other end of said dual web support structure of each said brake shoes including means to be acted upon by a brake actuation means, said brake actuation means being supported adjacent said brake shoes at only a single support location axially separated from an axially central location of said dual web support structure of said brake shoes, said spider comprising:

a pivoting end support plate having a first circular opening at one end thereof for closely receiving said axle therein, said pivoting end support plate being welded to said axle at a first axial location thereon at an edge of said first opening toward said wheel to cause said pivoting end support plate to extend radially, outwardly from said axle, said pivoting end support plate having an extended end thereof for supporting said pivot pin means at a central portion thereof aligned with said central location of said dual web support structure of said brake shoes;



an actuation support plate having a second circular opening at one end thereof for closely receiving said axle therein, said actuation support plate being welded to said axle at an edge of said second opening away from said wheel at a second axial location on said axle which is axially separated from said first axial location to cause said actuation support plate to extend radially, outwardly of said axle to position an extended end thereof at a circumferential location about said axle which is directly opposite said extended end of said pivoting end support plate, said actuation support plate having at its said extended end a means for supporting said actuation means at said single support location;

said pivoting end support plate and said actuation support plate respectively lying totally within planes which are perpendicular to said axle and parallel to each other; and

a pair of side plates extending axially at each side of said axle adjacent said first and said second openings, said side plates being integrally joined at a base portion thereof to said pivoting end support plate and extending therefrom to be welded to said actuation support plate to add rigidity and support to said pivoting end support plate at said first axial location and said actuation support plate at said second axial location.

4,452,348

SUITCASE WITH BAND ELEMENT FOR CONCEALING BUTT JOINT BETWEEN UPPER AND LOWER PARTS THEREOF

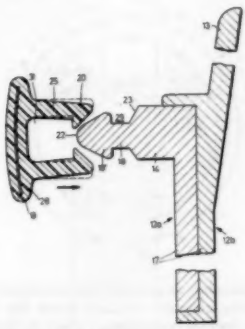
Karl G. Lehmann, Geschw.-Scholl-Str. 26, 5042 Erftstadt-Lechenich, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,594

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016621

Int. Cl.³ A45C *13/00, 13/36*

U.S. Cl. 190—122 13 Claims



1. A suitcase which comprises

a lower part and an upper part, each of said lower and upper parts including a frame means which has an inner surface that defines the interior of the suitcase and an outer surface, and each of said lower and upper parts providing an abutment edge, the abutment edges defining therebetween a butt joint which extends circumferentially around the suitcase when said upper part is positioned in close proximity to said lower part so as to close the suitcase,

a lip element connected to said lower part and positioned to extend over the entire abutment edge of said lower part, said lip element being elongated so as to extend circumferentially around the suitcase, said lip element including a base leg portion which contacts the abutment edge of said lower part and a mounting part which extends outwardly with respect to said lower part of the suitcase from said base leg portion, said mounting part including a bulbous tip, said lip element including a groove between the bulbous tip and the base leg portion, the side of said groove formed by said base leg portion slanting downwardly towards said groove,

a plastic band element mounted on the mounting portion of said lip element, said plastic band element being flexible and including two leg portions which extend away from one side thereof and towards each other, said two leg portions snap fitting around said bulbous tip of the mounting portion, said plastic band element being shaped to contact and seal against the outer surfaces of said lower and upper parts of the suitcase when they are closed and to concurrently conceal said butt joint.

4,452,349

CLUTCH WEAR MEASUREMENT DEVICE

Ernst Tscheplak, Weinstadt, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 17, 1981, Ser. No. 322,208

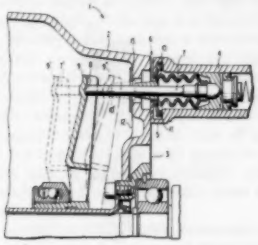
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044746

Int. Cl.³ F16D *2300, 66/02*

U.S. Cl. 192—30 W 9 Claims

1. A device for measuring wear of clutch linings of a clutch having a throwout fork means and a displaceable push rod means adapted to act upon the throwout fork means, charac-

terized in that means are provided for indicating a wear of the clutch linings including a sleeve means displaceably mounted on the rod means, stop means are provided in the clutch for displacing the sleeve means from a first position to a fixed second position corresponding to a maximum thickness of the



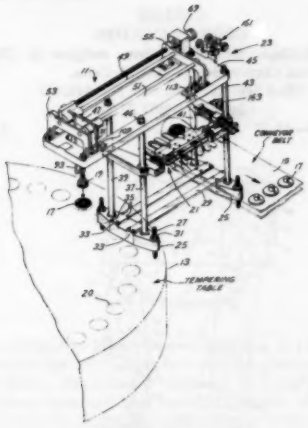
clutch linings when the clutch is disengaged the first time, and in that means are provided in the clutch for defining a measuring area of the sleeve means, the measuring area being arranged at a position such that the sleeve means is disposed in the vicinity of the measuring area when the clutch is engaged.

4,452,350

EXTRACTOR AND TRANSFER MECHANISM

Ronald Shields, Alexandria, Ind., assignor to Lynch Corporation, Anderson, Ind.

Filed Feb. 1, 1982, Ser. No. 344,648
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—424 **13 Claims**



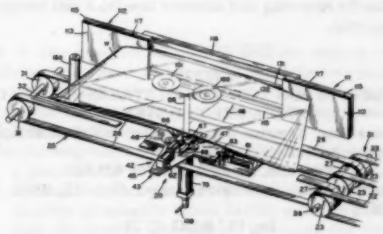
1. An extractor transfer mechanism comprising:
a support structure;
a platform secured to said support structure and extending therefrom for overhanging a work station;
carriage means mounted with respect to said platform for movement along a predetermined path;
lift means carried by said carriage means and operable for gripping a workpiece at the work station;
turnover means disposed relative to said path of said carriage means at an unload position in said path and having means for receiving a work piece from said lift means, said turnover means being actuable for inverting said work piece into a location spaced from said unload position; and
control means for controlling said carriage means to move between the work station and the unload position, for controlling said lift means to grip a work article at the work station, for controlling said lift means to release a work article at said unload position, and for controlling actuation of said turnover means in coordination with the position of said carriage means,
wherein said turnover means is positioned below the workpiece for receiving the same under gravity when released from said lift means, said turnover means being rotatably mounted about an axis of rotation for flipping the workpiece, said turnover means including,
a pair of fingers spaced apart and shaped for supporting the workpiece when released from said lift means, and
a receptor for holding the workpiece during flipping,
said pair of fingers positioned relative to said axis of rotation and shaped for guiding the workpiece into said receptor as said fingers are rotated about said axis, said receptor being shaped for guiding the inverted worked piece under gravity out of said receptor and into said spaced location.

4,452,351

SHEET HANDLING APPARATUS

James A. Meeker, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Nov. 23, 1981, Ser. No. 324,376
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—434 **9 Claims**



1. A sheet handling apparatus comprising: a frame; a horizontally reciprocal carriage mounted on said frame and movable in a first direction; a horizontally reciprocal slide mounted on said carriage for movement in a second direction normal to said first direction; means on said slide for supporting a sheet article, said supporting means including a gripping head mounted for free pivotal movement about a vertical axis and having a vacuum means thereon for bodily supporting the sheet article in a horizontal orientation, and means for lifting said gripping head from a lower sheet article receiving position to a generally horizontal plane above the sheet receiving position; first and second right angularly related stop means mounted on said frame; and means sequentially moving said slide and said carriage to urge the sheet article against said first and second stop means, respectively, to align the sheet article in a precise position.

4,452,352

APPARATUS FOR LOADING PARTS INTO BODIES

Ronald A. Cullen, Brixworth, England, assignor to Plessey Overseas Limited, Ilford, England

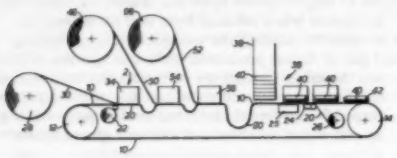
Filed Apr. 30, 1981, Ser. No. 259,243
Claims priority, application United Kingdom, May 3, 1980, 8014943
Int. Cl.³ B65G *47/04*
U.S. Cl. 198—482 **11 Claims**

1. Apparatus for loading parts into bodies, said apparatus comprising:
an intermittently indexable endless transporting strip, said strip being provided with a plurality of spaced slots formed therethrough;
means for feeding said transporting strip along a predetermined path;

an adhesive tape;

means for feeding said adhesive tape into contact with said transporting strip with an adhesive side exposed through said spaced slots;

means for feeding a continuous strip of connected parts in intermittently indexable relationship with and at the same rate as said transporting strip so that said connected parts are aligned with said slots in said transporting strip;



means for simultaneously removing parts from said strip of connected parts and pressing them into said slots in said transporting strip between indexing movements of said transporting strip so that said parts adhere to said exposed portions of adhesive tape;

means for loading said parts into a body between indexing movements of said transporting strip; and

means for removing said adhesive tape from said transporting strip.

4,452,353

APPARATUS FOR SEPARATING STACKS PLACED ON STACK FEED CONVEYOR

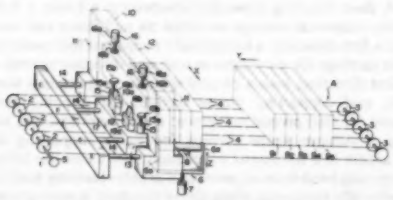
Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,335

Claims priority, application Japan, Oct. 12, 1981, 56-150020[U]

Int. Cl.³ B65G *47/29*

U.S. Cl. 198—492 **5 Claims**



1. A stack separating apparatus comprising: a stack lifter means located under the intermediate portion of a stack feed conveyor in the direction of conveyance and adapted to lift a stack from the conveyor; a frame means located in front of said stack lifter means transversely to said stack feed conveyor in a manner of surrounding the latter, said frame means being arranged to be freely movable in the direction of conveyance; front stoppers and lower holder means mounted on a lower frame member of said frame means so as to stand in the clearance between respective unit belts adjacent to each other of a plurality of unit belts forming said stack feed conveyor, said front stoppers and lower holder means being arranged to be vertically movable freely relative of said stack feed conveyor; and upper holder means mounted on an upper frame of said frame means opposite to said lower holder means and arranged to be vertically movable freely, wherein a plurality of stacks to be conveyed by said stack feed conveyor are first stopped by means of said front stoppers, and subsequently the foremost stack in the direction of conveyance is clamped in turn by means of said upper and lower holder means and then separated from the remaining stacks.

4,452,354

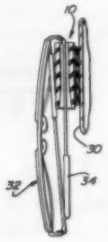
EYEGLASS HOLDER

Wayne Tabachnick, One Giffard Way, Melville, N.Y. 11747

Filed Jan. 13, 1983, Ser. No. 457,557

Int. Cl.³ A45C *11/04*; E04G *3/00*

U.S. Cl. 206—5 **8 Claims**



1. A holder for supporting a device comprising a tube of flexible plastic having oppositely disposed wide side walls and substantially narrower end walls so that the inner periphery of the tube is elongated and generally rectangular, said side walls being sufficiently flexible so that one side wall may be deformed into contact with the other side wall by application of finger pressure and is sufficiently resilient so as to cause the side walls to return to their original shape wherein they are generally parallel to one another, and means attached to the other wide side wall for adhesively securing the tube to a support surface.

4,452,355

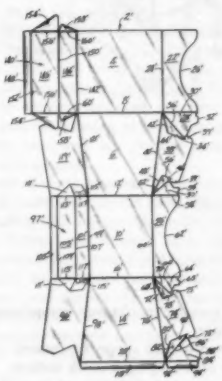
DISPLAY CARTON

Albert A. Benham, Granville, Mass., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 16, 1982, Ser. No. 418,633

Int. Cl.³ B65D *25/00*

U.S. Cl. 206—45.31 **6 Claims**



1. A display carton for holding and displaying a spherical article, said carton being formed from a one piece paperboard blank, said carton comprising:

(a) top, bottom and side wall panels connected together along parallel fold lines to form an open ended tubular container;

(b) a plurality of locking panels foldably connected to front and back edges of said side wall panels and folded into the confines of said tubular container adjacent to the inside surfaces of said side wall panels;

(c) a plurality of article framing and retaining panels foldably connected to front and back edges of said top and bottom wall panels and extending into the confines of said tubular container;

(d) at least one of said article framing and retaining panels including a first section extending into said tubular container at an acute angle to the top or bottom wall panel to which it is foldably connected, and a second section foldably connected to said first section and extending inwardly and toward the top or bottom wall panel to which said first section is foldably connected, a pair of locking flaps foldably connected to side edges of said first section and sandwiched between opposed ones of said locking panels and the respective side wall panels to which said ones of said locking panels are foldably connected to prevent withdrawal of said first section from the confines of said tubular container; and

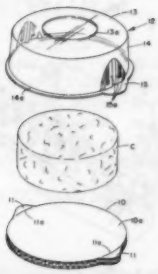
(e) a pair of support panels foldably connected to opposite side edges of said second section and disposed adjacent to said side wall panels, said support panels having free edges operable to engage the top or bottom wall panel to which said first section is foldably connected to support said first and second sections and prevent displacement thereof toward the top or bottom wall panel to which said first section is foldably connected.

4,452,356

PACKAGING FOR BAKERY ITEMS

Robert S. Dahl, 445 N. Twin Oaks Valley Rd., San Marcos, Calif. 92069

Filed Dec. 3, 1982, Ser. No. 446,468
Int. Cl.³ B65B *25/16*
U.S. Cl. 206—45.32 **11 Claims**



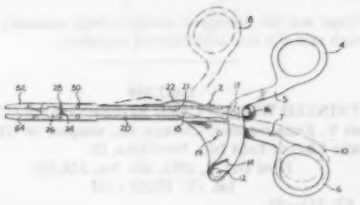
1. A package for bakery items comprising, in combination, a paperboard base conforming in horizontal configuration to the bakery item to be packaged but being horizontally larger than such bakery item; said base having a plurality of peripherally spaced, laterally projecting flexible tabs; a cover formed from transparent thermoplastic sheet, said cover having a top wall conforming in horizontal configuration to the bakery item to be packaged, said top wall being horizontally larger than such bakery item but smaller than said base; a sidewall depending peripherally from said top wall and having a bottom edge resting on the periphery of said paperboard base; said sidewall being of greater height than the bakery item and having horizontally projecting integral tab portions on its bottom edge respectively constructed and arranged to overlie said paperboard base tabs; said cover tab portions being substantially rigid relative to said sidewall; a food grade tacky adhesive disposed between the abutting surfaces of said cover tabs and said base tabs for sealing and resealing said package; and a score line formed in said paperboard base in transverse relation to each of said base tabs, whereby said base tabs may be manually deflected downwardly to release the adhesive securement to said cover tabs, said package thereby being adapted to permit repeated and alternate secure engagement or disengagement of said cover and said paperboard base.

4,452,357

SURGICAL STAPLER

Charles H. Klieman, 3737 Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, South Gate, Calif., assignors to Charles H. Klieman, Lynwood and L. David Covell, Los Angeles, both of, Calif., a part interest

Continuation of Ser. No. 171,129, Jul. 22, 1980, abandoned. This application Apr. 14, 1983, Ser. No. 483,746
Int. Cl.³ B65D *85/24*
U.S. Cl. 206—339 **9 Claims**



1. A clip magazine adapted to associate with a surgical applying device having a main body, clip deforming means for receiving and deforming clips, and clip feed means for feeding clips from the magazine to the clip deforming means, said magazine comprising:

(i) a housing wherein a plurality of clips are stored aligned in a plane parallel to the main body, said housing having a sidewall oriented generally parallel to the clips, and a plurality of inwardly biased flexible members associated with the housing and adapted to engage the clips and thereby prevent substantial rearward movement of the clips; and

(ii) clip loading means, carried within the housing, for urging the clips through the housing to the clip feed means, said loading means including a reciprocating loading blade slideably carried within the housing, said loading blade having a plurality of inwardly biased flexible members adapted to engage the clips in the magazine, wherein a forward movement of the loading blade engages the blade flexible members with the clips to advance the clips in unison and substantial rearward movement of the clips induced by a rearward movement of the loading blade is prevented by engagement of the clips with the housing flexible members; and

(iii) coupling means engaging the housing and the clip applying device for coupling the housing sidewall to said clip applying device.

4,452,358

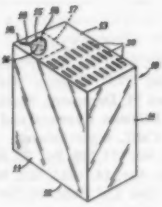
MEDICAL APPLIANCE DISPOSAL CONTAINER

James L. Simpson, 307 MacLaren La., Lake Bluff, Ill. 60044

Continuation-in-part of Ser. No. 354,951, Mar. 5, 1982, Pat. No. 4,410,086. This application Aug. 12, 1983, Ser. No. 522,618
Int. Cl.³ B65D *25/00*; B26F *3/00*; B65F *7/00, 1/02*
U.S. Cl. 206—366 **21 Claims**

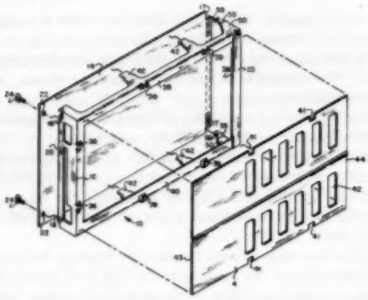
1. A medical appliance disposal container comprising; a container body comprising a bottom and side walls; and a container top enclosing said container, said container top having at least one opening therein for insertion of medical appliances, said opening being covered by at least one slotted plastic membrane, said slot being of sufficient size to permit insertion of the desired medical appliance into the disposal container,

and a needle destruction means located at one end of said slot whereby needles may be rendered unusable while attached to



a syringe and the destroyed needle-syringe assembly inserted through said slot into said disposal container.

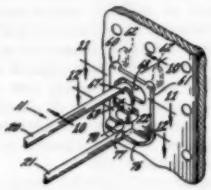
4,452,359
PRINTED WIRING CARD STIFFENER BRACKET
James V. Koppensteiner, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 7, 1981, Ser. No. 328,300
Int. Cl.³ H02B 1/02
U.S. Cl. 211—41 **4 Claims**



1. A printed wiring card stiffener bracket comprising:
a first portion extending along the edge of a printed wiring card to be stiffened that is exposed when the card is inserted into a card file, said first portion including means mounting said first portion to the printed wiring card; and,
a second portion integrally joined to said first portion, extending along the remaining edges of the printed wiring card and including a plurality of blade arms resting on the edges of the printed wiring card that adjoin the second portion at intervals suitable to stiffen the printed wiring card and prevent warpage and linear distortion, and a pair of corner members each including L-shaped tab portions having a slot opening toward said first portion and arranged to engage and accept therein the printed wiring card edge opposite said first portion, whereby said stiffener bracket is retained to said printed wiring card.

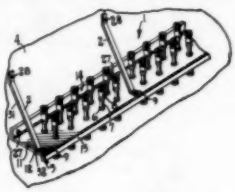
4,452,360
HANGER ASSEMBLY WITH U-SHAPED HANGER
Richard D. Barnes, Rockford, Ill., assignor to Southern Imperial, Inc., Tupelo, Miss.
Filed Mar. 19, 1981, Ser. No. 245,314
Int. Cl.³ A47F 5/08
U.S. Cl. 211—59.1 **16 Claims**

1. A hanger assembly adapted for attachment to an upright panel having horizontally spaced holes formed therethrough, said hanger assembly comprising a substantially U-shaped hanger having upper and lower arms adapted to project outwardly from the panel and having an upright connector extending between and joining the inner ends of said arms, said hanger assembly further comprising a mounting bracket for attaching said hanger to the panel, said bracket comprising an upright plate, a pair of horizontally spaced horns on the inner side of said plate and adapted to extend through two of said holes to attach the plate releasably to the panel either with or



without the hanger attached to the bracket, a member located outwardly from said plate for receiving said connector, and an upright opening along one laterally facing side of said member and extending throughout the entire height thereof for removably attaching said hanger to said bracket by moving said connector through said opening and into said member, said hanger being detachable from said bracket by withdrawing said connector out of said member and through said opening.

4,452,361
PNEUMATIC TOOL RACK
Marshall E. Harris, Rte. #1, Altoona, Wis. 54720
Filed Jun. 11, 1981, Ser. No. 272,713
Int. Cl.³ A47F 7/00
U.S. Cl. 211—60 T **12 Claims**



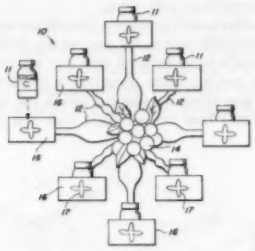
1. A tool rack for holding pneumatic tools of the type having male air coupler nipples, comprising:
(a) a platform member having top and bottom surfaces;
(b) means for supporting said platform member wherein said surfaces are substantially horizontal;
(c) a plurality of mounting stud means, each having a receiving end; and
(d) a plurality of female air coupler members, each of said female air coupler members cooperatively connected to the receiving end of one of said mounting stud means, said female air coupler members adapted to quick-releasably lockably engage the male air coupler nipples of the pneumatic tools to be held, wherein the tools are supportably latched to said female air coupler members when the male air coupler nipples are lockably engaged to said female air coupler members; and
(e) means for fastening said mounting stud means in spaced apart relationship to said platform member, wherein said receiving ends extend below said bottom surface, whereby the tools are quick-releasably lockably supported in inverted positions by said tool rack when the male air coupler nipples and female air coupler members are lockably engaged.

4,452,362

WALL MOUNTED BOTTLE RACK

Rita L. Mancin, 260-65th St., Apt. 26-H, Brooklyn, N.Y. 11220

Filed Jun. 15, 1981, Ser. No. 273,436
Int. Cl.³ A47B 73/00
U.S. Cl. 211—75 2 Claims



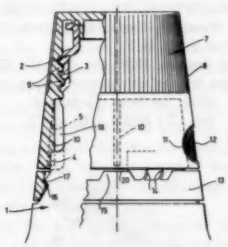
1. A wall mounted bottle rack forming a circular outer shape, comprising: a vertical central hub, a plurality of arms radially extending form said hub and lying in common vertical place, a substantially similar receptacle at the distal end of each arm in which an item is removably stored, said receptacles lying in a common vertical plane, the length of each receptacle being such as to fit within vertical planes defined by the edges of the adjacent receptacles on either side thereof, said arms alternating between two radial lengths, whereby the receptacles are easily accessed without interference from other receptacles, and loop pile fasteners for removably coupling said receptacles to the distal ends of said arms and for accommodating desired angular and longitudinal orientation of the receptacles with respect to the arms.

4,452,363

TAMPER-RESISTANT AND CHILD-RESISTANT CONTAINER AND CAP ASSEMBLY

Eugene E. Davis, Ilford, England, assignor to Johnsen & Jorgenson (Plastics) Ltd., London, England

Filed Jun. 23, 1983, Ser. No. 507,135
Claims priority, application United Kingdom, Sep. 12, 1982, 8235092
Int. Cl.³ B65D 55/02
U.S. Cl. 215—216 9 Claims



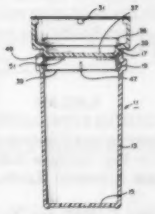
1. A tamper-resistant and child-resistant container and cap assembly comprising a container body with a substantially cylindrical neck including an externally screw threaded portion near to the top and a plurality of lugs at the bottom, a cap with a cap body which tapers internally outwardly from an internally screw-threaded part near to the top and which has a corresponding number of depending webs near to the bottom for engagement with the lugs of the container body in the manner of a ratchet and pawl mechanism and a tamper-resistant band provided below the cap body and connected thereto by frangible tongues, the band being shaped to engage with the container body so that when the cap is unscrewed the cap body rises but the band is held down and the frangible tongues are broken.

4,452,364

SAFETY CLOSURE DEVICE FOR MEDICINE CONTAINER

Ronald D. Kay, 3513 Hazeline Rd., Fort Worth, Tex. 76103

Filed Feb. 7, 1983, Ser. No. 464,406
Int. Cl.³ B65D 39/04
U.S. Cl. 215—253 5 Claims



1. In a container of the type having a plurality of lugs spaced around the upper edge of the container, each having a recess on its lower side for receiving a dog of a cap to secure the cap, an improved means for indicating whether tampering of the contents of the container has occurred prior to use, comprising:

a downwardly facing annular shoulder formed in the interior of a sidewall of the container;

a lock ring having a sidewall with an exterior dimensioned for a close reception within the sidewall of the container;

an upwardly facing shoulder formed in the exterior of the lock ring sidewall, protruding an amount greater than the inner diameter of the sidewall of the container;

the lock ring being deformable, and a selected one of the sidewalls having a tapered portion to facilitate movement of the lock ring shoulder past the container shoulder when pressing the lock ring into the container, the shoulders engaging to prevent upward movement of the lock ring with respect to the container;

the cap having a top integrally formed to the lock ring, with the interior of the cap facing upwardly; and

annular score line means formed between the cap and lock ring, providing a weakened area for breaking the cap from the lock ring for providing access to the contents and allowing the cap to be inverted and secured to the lugs of the container.

4,452,365

CLOSURE DEVICE FOR HERMETICALLY SEALING CONTAINERS

Francisco Ascasíbar-Verdejo, 8 Chopos St., Monteclaro-Madrid 23, Spain

Filed Oct. 26, 1982, Ser. No. 436,765
Claims priority, application Spain, Oct. 27, 1981, 261.067
Int. Cl.³ B65D 41/22
U.S. Cl. 215—346 2 Claims

1. In a closure device for providing a seal with a container having a shallow external bead in the region of the mouth-

defining rim of the container, the closure device being of the type which comprises a panel, means defining a perimetric internal channel circumscribing the panel and forming a skirt beyond the channel, and a molding gasket formed of compressible plastic material reposing in the channel and extending along the internal surface of the skirt, the portion of the gasket extending along the internal surface of the skirt being provided with a plurality of internal projections, the improvement characterized by the features that each projection is separately formed integrally with said gasket with adjacent projections being circumferentially spaced from one another, that each projection has a shallow rectangular prismatic configuration, and that a lower portion of each of the projections being adapted to extend beyond the external bead on the container, whereby the closure device may be retained on the container in sealing relation therewith by the interengagement of the projections and the bead.

4,452,366

CARGO CONTAINERS

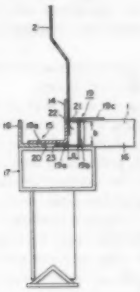
Hideo Nagai, Utsunomiya, and Fumio Koga, Yokohama, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Jidosha Kabushiki Kaisha, Yokohama, both of, Japan

Filed Mar. 7, 1983, Ser. No. 472,916

Claims priority, application Japan, Mar. 30, 1982, 57/51886; Mar. 30, 1982, 57/51887

Int. Cl.³ B65D *7/24*

U.S. Cl. 220—4 R **6 Claims**



1. A cargo container comprising: floor means having seat means formed along at least some of side edges thereof; upright side panel means having bottom edges, respectively, at least some of the bottom edges being seated respectively on said seat means to form a box-shaped container chamber with the top opened; roof means closing the top; and means forming a water trapping chamber along each of said some side edges of the floor means, said chamber extending lengthwise of each side edge and opening outwardly, said chamber being closed substantially by the lower portion of one of the side panel means which is disposed immediately outward of the chamber, and having a bottom surface in substantially coplanar relationship with one of the seat means, said chamber having a top surface extending outwardly and transversely to the chamber to form a water barrier means.

4,452,367

VARIABLE SIZE BOX CONSTRUCTION

Sam Wein, 14983 Tacuba Dr., La Mirada, Calif. 90638

Filed May 16, 1983, Ser. No. 494,863

Int. Cl.³ B65D *5/22, 5/54*

U.S. Cl. 229—33 **9 Claims**

1. An arrangement for forming a box comprising

a generally rectangular sheet,

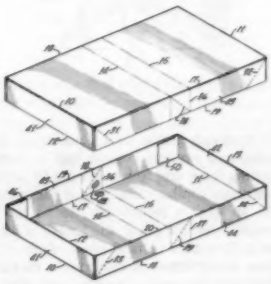
two side edge and two end edge panels of substantially equal width extending around said sheet, and bent 180 degrees about the bases thereof so as to be doubled over said sheet,

said side edge and end edge panels being secured together at their ends so that side edge and end edge panels can be unfolded 90 degrees to define interconnected upstanding walls,

releasable means securing localized central portions of said side edge panels to said sheet,

said side edge panels including frangible portions adjacent said releasable means for permitting each of said side edge panels to be severed into two sections,

said sheet and said side edge panels including bend line means providing lines along which the same are relatively easily bent and arranged such that upon severing



said side edge panels at said frangible portions, portions of said sheet intermediate said releasable means can form one wall of a box when said side edge and end edge panels are unfolded,

said sheet on one side of said wall, the severed portions of said side edge panels and one of said end edge panels forming a lid, and said sheet on the other side of said wall, the remaining portions of said side edge panels and the other of said end panels forming a receptacle of a relatively small box,

and alternatively, said releasable means can be released so that said side edge panels and said end edge panels when so unfolded cooperate with said sheet to form one-half of a relatively large box.

4,452,368

LIGHTWEIGHT CONTAINER

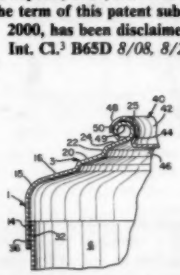
Donald J. Roth, Westport, Conn., assignor to The Continental Group, Inc., New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,226

The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.³ B65D *8/08, 8/22*

U.S. Cl. 220—67 **15 Claims**



1. A container for pressurized products comprising cylindrical top and bottom portions, said bottom portion having an open top end section, said top portion being a relatively axially short prehensible member telescoped over said open top end section and having a thin top wall of such dimension as to be

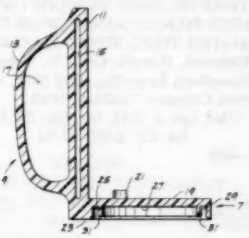
operative upon internal pressure being applied thereagainst to effect a hoop stress along a bottom edge of said top portion operative against said top end section of the bottom member, and an adhesive securing said top and bottom portions to each other along said open top end section and the bottom edge of said top portion, said top wall being toro-conical in shape, said top portion at said bottom edge comprising an axially extending cylindrical lip axially overlapping the open top end section of the bottom portion, and said top wall including a frusto-conical section spaced from and above and tapering away from the lip, said frusto-conical section having a lower wide end adjacent the lip and therebeing a toroidal transition section between said wide end of the frusto-conical section and said lip.

4,452,369

HOLDER FOR AN INSULATED CONTAINER OF BEVERAGE

Christopher Rhodes, Rte. 1, Box 311, Oak Dr., O'Fallon, Mo. 63366

Filed Dec. 16, 1982, Ser. No. 450,300
Int. Cl.³ B65D *8/04, 55/16*
U.S. Cl. 220—85 H **16 Claims**



1. A holder for a cylindric container of beverage in an insulator strip, said insulator strip being adapted to be wrapped around said container and its ends fastened, said holder comprising a base for supporting the insulated container in an upright position, and handle means comprising inner and outer handle members extending upwardly from the base at its periphery, the outer handle member being spaced from the inner handle member to provide a hand opening, said inner handle member having a vertical slot therein through which one end of said insulator strip may be inserted and the strip then wrapped around the container for securing the insulator and container therein on the base.

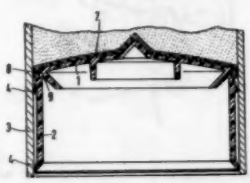
11. A holder for a cylindric container of beverage in an insulator strip, said insulator strip being adapted to be wrapped around a container and its ends releasably fastened in overlapping relation, said holder comprising a base for supporting the insulated container in an upright position and handle means extending up from the base at the periphery of the base, said handle means having an elongate generally vertical opening therein through which one end of said insulator strip may be inserted and the strip then wrapped around the container for securing the insulator and container therein on the base, and a lid of resilient material for said container securable to the base, said lid having a flange at its periphery and said base having a groove therein for receiving the flange.

4,452,370

BOTTOM CLOSURE FOR CONTAINER

Gert Langensiepen, and Werner Brüning, both of Engelskirchen, Fed. Rep. of Germany, assignors to Alfred Fischbach KG Kunststoff-Spritzgusswerk, Engelskirchen, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,629
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148490
Int. Cl.³ B65D *83/00*
U.S. Cl. 220—93 **4 Claims**



1. A piston-shaped bottom closure for a hollow container having a filling opening and an inner wall bounding a storage chamber for a plastic mass, the closure comprising a closing member having an axis and arranged so that when the closure is inserted into a container said closing member extends transversely to a tubular inner wall of the container and has an outer side facing toward a storage chamber of the latter, said closing member having a tubular extension with an outer edge portion, said outer side having a contour convexly-shaped in the direction towards the storage chamber at said outer side, said tubular extension extending from the outer periphery of said outer side in a direction opposite said contour; a hollow, tubular guiding member extending from said tubular extension of said closing member in an axial direction and arranged so that in the inserted condition of the closure said guiding member is guided by the inner wall of the container; at least one sealing lip provided on said guiding member and arranged to abut against the inner wall of the container in the inserted condition of the closure, said closing and guiding members and said sealing lip being composed of a material having a predetermined elasticity; and a cover member arranged on said outer side of said closure member and having a contour substantially corresponding to the contour of the latter, said cover member being composed of a material having a different elasticity than said closing and guiding members and said sealing lip and being provided with a tubular extension having an edge portion which extends toward said guiding member and overlaps said outer edge portion of said closing member so as to be arrested on the latter in said axial direction, said edge portion of said cover member and said outer edge portion of said closing member having means for snap-locking one behind the other, said cover member together with said edge being composed of an elastic material which is stiffer than the material of said closing and guiding members.

4,452,371

TAMPER-RESISTANT EQUIPMENT HOUSING

Richard D. Jurek, Lakeville, Minn., assignor to Air-Vend, Inc., Eden Prairie, Minn.

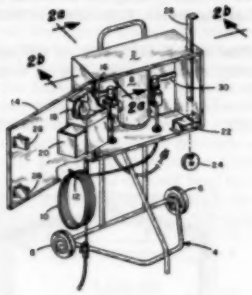
Filed Jul. 15, 1983, Ser. No. 514,299
Int. Cl.³ B65D *45/00*
U.S. Cl. 220—315 **5 Claims**

1. A tamper-resistant enclosure comprising:

(a) a formed enclosure fabricated to have at least one hingeable side for permitting access to the interior thereof;

(b) a locking bar extendable through said enclosure through a plurality of formed loops mounted therein such that said locking bar is contained within said loops so as to prevent the opening of said hinged side; and

(c) said enclosure having a recessed portion formed therein such that one end of said locking bar extends into said



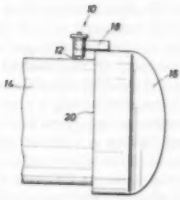
recess and whereat lock means secure said locking bar against withdrawal and whereby said lock means remains substantially protected from external vandalism.

4,452,372

CLOSURE SAFETY DEVICE

Gary B. Robbins, Houston, Tex., assignor to Modco Industries, Incorporation, Conroe, Tex.

Filed Jul. 8, 1983, Ser. No. 511,899
Int. Cl.³ B65D 45/00
U.S. Cl. 220—316 20 Claims



1. A pressure activated safety device for mechanical objects, comprising:

(a) body means being positioned to restrict movement of a mechanical object and being formed to define a pressure chamber in communication with a source of pressure, said body means further having releasable seal means normally preventing communication of said pressure chamber and the atmosphere;

(b) partition means being movably disposed within said pressure chamber and being positionable at a locking position responsive to pressure within said pressure chamber, said partition means being manually movable from said locking position only upon the occurrence of a negligible pressure condition within said pressure chamber; and

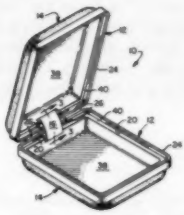
(c) unlocking means being movably positioned relative to said body and being engagable with said partition means, said unlocking means being manually movable to an unlocking position only upon movement of said partition means from said locking position by said seal releasing means and at said unlocking position said unlocking means being manually manipulatable to alter said body means thus permitting movement of said mechanical object.

4,452,373

JEWELRY BOX HINGE STRUCTURE

Don J. Pearce, Smithfield, and Richard J. Pearce, Lincoln, both of R.I., assignors to Packaging By Forming Industries, Inc., Smithfield, R.I.

Filed Jun. 15, 1982, Ser. No. 388,643
Int. Cl.³ B65D 43/24
U.S. Cl. 220—335 10 Claims



1. A container for storing and displaying merchandise comprising:

a pair of identical frames;

a shell secured to each frame to define a body member and a cover member for the container;

protrusions on each frame which cooperate with the protrusions on the other frame to define a hinge; and

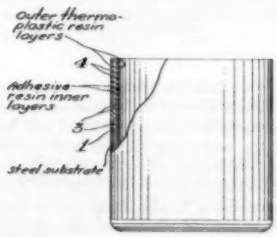
means for holding the protrusions together.

4,452,374

MANUFACTURE OF DRAW-REDRAW CANS USING AN IRRADIATED FILM LAMINATED OR EXTRUSION COATED STEEL SHEET MATERIAL

Martin K. Hitchcock, Newark; Craig W. Potter, Findlay, and Floyd E. Romesberg, Granville, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1981, Ser. No. 250,354
Int. Cl.³ B65D 90/04
U.S. Cl. 220—458 13 Claims



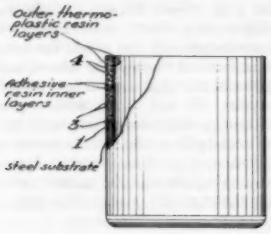
11. A drawn food or beverage container made of a laminated or extrusion coated steel sheet material comprising a steel sheet substrate having adhered to both major surfaces thereof a multilayered synthetic thermoplastic resin coating (A) comprising an adhesive synthetic thermoplastic resin inner layer which is composed of at least a major proportion of a normally solid random copolymer of ethylene with from about 1 to about 30 weight percent, based upon said copolymer, of an ethylenically unsaturated carboxylic acid monomer and which copolymer is bonded on one side directly to the surface of said steel sheet and is adhered on its other side to an outer layer of a synthetic thermoplastic polymer resin having a crystalline melting point of at least about 250° F. and (B) having been exposed to an electron beam irradiation dosage of from about 2 to about 20 megarads; said container having been formed by a draw-redraw can forming process.

4,452,375

MANUFACTURE OF DRAW-REDRAW CANS USING STEEL SHEET MATERIAL FILM LAMINATED OR EXTRUSION COATED WITH A HIGH DENSITY POLYETHYLENE GRAFT COPOLYMER

Stanley A. Marcus, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1981, Ser. No. 250,441
Int. Cl.³ B65D 90/04
U.S. Cl. 220—458 10 Claims



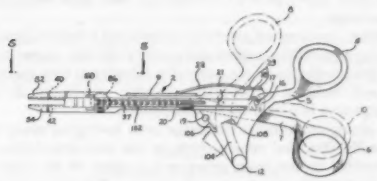
10. A drawn food or beverage container made by a draw-redraw can forming process from a laminated or extrusion coated steel sheet material having directly adhered to at least one major surface thereof a layer of an adhesive synthetic thermoplastic resin composition which has a crystalline melting point of at least about 250° F. and which comprises a graft copolymer of high density polyethylene with from about 0.5 to about 15 weight percent, based upon such graft copolymer, of an ethylenically unsaturated carboxylic acid monomer.

4,452,376

HEMOSTATIC CLIP APPLICATOR

Charles H. Klieman, 3737 Century Blvd., Lynwood, Calif. 90262, and Richard M. Densmore, South Gate, Calif., assignors to Charles H. Klieman, Los Angeles, Calif.

Continuation of Ser. No. 175,482, Aug. 5, 1980, abandoned, which is a division of Ser. No. 822,076, Aug. 5, 1977, abandoned. This application Mar. 2, 1983, Ser. No. 471,322
Int. Cl.³ B65H 1/14, 3/24; A61B 17/12
U.S. Cl. 221—198 32 Claims



1. A clip magazine adapted to be externally attached to a surgical clip applying device having clip deforming means for receiving and deforming clips, comprising:

(i) a housing wherein a plurality of clips are stored; and

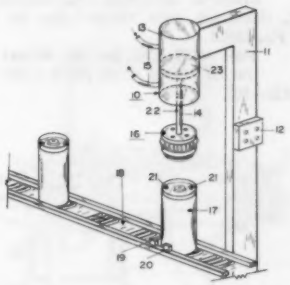
(ii) a laminated clip feed means slideably disposed within said housing and adapted to slide into and out of said clip deforming means, for sequentially moving said clips to said clip deforming means, said laminated clip feed means comprising a plurality of thin blades which are uncoupled from each other over a portion of their length.

4,452,377

CONTAINER RELIEF DEVICE AND METHOD

Byron H. Hurley, Rte. 1, Box 214-B, Julian, N.C. 27283, and Walter G. Ricks, Rte. 1, Box 108-C, Pleasant Garden, N.C. 27313

Filed Apr. 1, 1982, Ser. No. 364,492
Int. Cl.³ B67D 5/08
U.S. Cl. 222—1 16 Claims



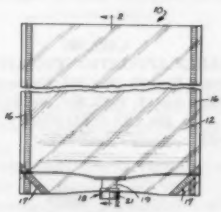
1. A device for relieving the internal pressure of a pressurized container having a dispensing valve, said dispensing valve being positioned on an end wall of the container adjacent the periphery thereof, comprising: a moveably mounted relief head, a circular array of resilient projecting members, said projecting members depending from said relief head, and guide means wherein said guide means is joined to said relief head for directing at least one of said projecting members to the dispensing valve irrespective of the angular position of said dispensing valve with respect to said circular array of projecting members.

4,452,378

GUSSETTED BOTTOM POUCH

William C. Christine, Catasauqua, Pa., assignor to Trinity Associates, Nazareth, Pa.

Filed Jun. 16, 1982, Ser. No. 389,099
Int. Cl.³ B65D 30/10
U.S. Cl. 222—107 1 Claim



1. A flexible pouch for storing and dispensing fluent material consisting solely of a first pair of walls, a second pair of walls connected to and being reversely folded relative to said first pair of walls, said second pair of walls being connected together along contiguous edges, first sealing means for sealing the edge portions of said first pair of walls together, fitment means sealingly connected to said second pair of walls, and fluent material contained within said pouch, whereby the weight of the fluent material causes said second pair of walls to be extended downwardly and to form a funnel when said pouch is in a generally vertical position so that substantially all of the fluent material may be discharged from said pouch through said fitment means, said first and second pairs of walls being folded from a unitary strip of material, said first and

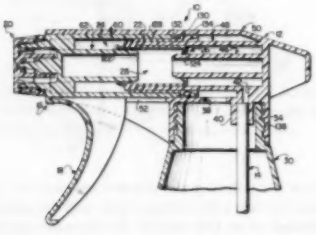
second pairs of walls being constructed of plastic material, and second sealing means disposed in angular relationship with said first sealing means and sealing portions of said second pair of walls together and sealing portions of said first pair of walls to portions of said second pair of walls.

4,452,379

PUMP DISPENSER WITH ONE-PIECE STRETCHABLE BIASING MEMBER AND VALVE

Robert L. Bundschuh, 6534 Miami Lakes Dr. East, Miami Lakes, Fla. 33014

Filed Jul. 9, 1982, Ser. No. 396,833
Int. Cl.³ B65D *37/00*; F05B *11/00*
U.S. Cl. 222—207 **15 Claims**



1. In a manually-operated pump dispenser including a housing adapted to be coupled to a liquid-containing bottle and having a fluid passageway, a dip tube extending from the passageway into the bottle and a vent for venting the bottle to the atmosphere; a pump member having a fluid passageway with an exit orifice, and a finger engaging element, the pump member being slidably engaged with the housing; and a pair of one-way valves located along the pump member and the housing fluid passageways, the improvement comprising:

a one-piece, annular resilient member for biasing the pump member away from the housing,

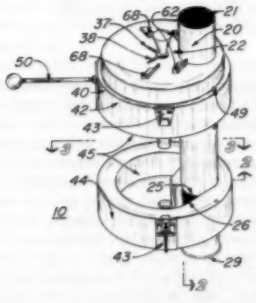
said resilient member including a first portion engaging the housing, a second portion engaging the pump member, and a stretchable portion located between said first and second portions which is longitudinally stretched upon movement of the pump member towards the housing.

4,452,380

PORTABLE APPORTIONING APPARATUS

Arthur E. Garrett, Rte. 10, Box 204, Caldwell, Id. 83605

Filed Aug. 1, 1983, Ser. No. 519,535
Int. Cl.³ B65D *90/60*
U.S. Cl. 222—335 **5 Claims**



1. Apparatus attachable to a product dispensing mechanism for the apportioning and dispensing of a fluid product comprising:

a product flow tube having an inlet and an outlet opening, an internal stop, a first wall cut-out above and adjacent said stop, and a second wall cut-out opening below and adjacent to said stop;

a housing sealingly and rotatably engaging said product flow tube, said housing defining an enclosed cavity selectively in fluid communication with each of the cut-outs of said product flow tube, and;

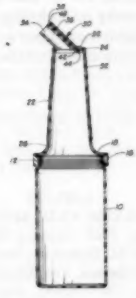
a rotatable baffle contained within and sealingly engaging the interior walls of said housing to define two separate apportioning cavities therein, each cavity selectively in fluid communication with one of said cut-outs whereby a fluid product injected through the inlet of said flow tube and through said first wall cut-out into one of the apportioning cavities, fill said cavity with a predetermined amount of said product dependent upon the degree of rotation of said baffle while simultaneously emptying a predetermined amount of said product from the second apportioning cavity through the second wall cut-out and through the outlet of said product flow tube.

4,452,381

BEVERAGE DISPENSING SYSTEM

Bruce A. Freeman, Oklahoma City, Okla., assignor to Continental Plastics Company, Oklahoma City, Okla.

Filed Mar. 29, 1982, Ser. No. 362,981
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—465 R **1 Claim**



1. A flexible, synthetic resin beverage dispensing system for dispensing a beverage from a storage container into a relatively small shot glass, tumbler or the like, said dispensing system comprising:

a base container of generally cylindrical configuration having a cylindrical upper end portion of lesser diameter than the remainder of the generally cylindrical base container, and defining a generally circular, externally threaded opening into said upper end portion;

an elongated, tubular discharge neck having an open, internally threaded annular base at one end detachably connected to the open upper end portion of the base container, said annular base having parallel ridges disposed peripherally around the external surface thereof and each extending substantially parallel to the axis on the cylindrical base container to facilitate gripping the discharge neck for unthreading the discharge neck from the cylindrical base container and further affording freedom from the lodging of contaminants between such parallel ridges, said discharge neck further having a second end opposite said one end, and having an elongated tubular hand grip portion tapering from a relatively large diameter end to a relatively small diameter end, said discharge neck further including,

an open, cylindrical end portion forming said small diameter end;

roughened areas around the outer side of said tubular hand grip portion between the ends thereof formed by roughening the synthetic resin at said roughened areas;

an annular step of triangular cross-section extending around the inner side of the small diameter end portion of said elongated tubular hand grip portion at a location spaced inwardly from the opening thereinto; and

an outwardly flaring frust-conical connecting portion connecting said large diameter end of said hand grip portion to said internally threaded annular base; and

a synthetic resin pouring spout snap-detachably connected to said small diameter end portion and angularly inclined at an acute angle with respect to the longitudinal axis of said elongated tubular discharge neck, said synthetic resin pouring spout including:

a disc-shaped base plate pressed into said small diameter end portion of said tubular hand grip portion and including a peripheral area which snap-engages the open, cylindrical end portion forming said small diameter end of said elongated tubular hand grip portion of said tubular neck;

a raised circular pad formed on the base plate on its side opposite the side facing the interior of the elongated tubular discharge neck and reinforcing the central portion of the base plate within the peripheral portion of the base plate which yieldingly snap-engages the open cylindrical end portion forming the small diameter end of said elongated tubular hand grip portion of said tubular neck;

a liquid discharge channel of circular cross-section providing a passageway for liquid from the discharge neck to a discharge channel opening at one end of the liquid discharge channel in said pouring spout;

an air vent channel positioned immediately adjacent, and extending parallel to, the liquid discharge channel, and having an air vent channel opening adjacent said discharge channel opening located at one end of the discharge channel whereby any liquid from the base container and tubular discharge neck entering said air vent channel is discharged through said air vent channel opening adjacent the discharge channel opening located at one end of the liquid discharge channel and in the same direction as liquid discharged through said liquid discharge channel, said air vent channel having a greater length from one end thereof to the other than said liquid discharge channel, and isolated over its length from communication with said liquid discharge channel, to thereby avoid obstructing the air vent channel with liquid flowing through said liquid discharge channel; and

a semi-cylindrical lip projecting from the end of the spout engaged with said tubular hand grip portion of the discharge neck, said semi-cylindrical lip defining a protective pocket diminishing the entry of liquid from the discharge neck into the air vent channel, said semi-cylindrical lip projecting past said base plate into said discharge neck.

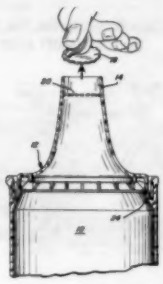
4,452,382

CONTAINER CLOSURE

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Nov. 10, 1981, Ser. No. 319,933
Int. Cl.³ B65D *25/44*
U.S. Cl. 222—529 **29 Claims**

1. In a container having an open mouth proportioned to receive a snap-on lid, an annular straight flange extending inwardly from the inner wall of said container about its circumference adjacent said mouth, said flange extending toward said open mouth at an angle of 15° to 60° to the inner wall, to define an annular pocket between said flange and inner wall for receiving and retaining said snap-on lid, and an annular step extending inwardly from said inner wall toward the center of said container at a position above said annular pocket to define



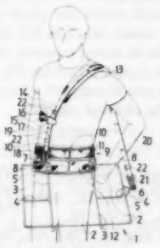
an annular recess with said pocket for contacting a portion of said lid.

4,452,383

CARRYING DEVICE FOR POT PLANT CELL UNITS

Toivo O. Marttinen, 56510 Puntala, Finland

Filed Jun. 23, 1982, Ser. No. 391,322
Claims priority, application Finland, Jun. 25, 1981, 811988
Int. Cl.³ A45C *11/00*
U.S. Cl. 224—208 **3 Claims**



1. A carrying device for pot plant cell units, containing pot plants to be planted, the carrying device being of the type which is designed to be supported to the body of a planting person, comprising:

a rectangular tube frame having two long sides and two short sides, for supporting the cell units;

a side arc fastened to one of the long sides of the frame for supporting the frame to the waist of the planting person;

a shoulder belt for passing from the breast side of the planting person across one shoulder to the back side;

a side belt passing around the side of the person, opposite said one shoulder;

a front belt connected to the frame near the side arc;

a rear belt connected to one short side of the frame;

a front connecting element for interconnecting the shoulder belt, the side belt, and the front belt at the breast side of the planting person;

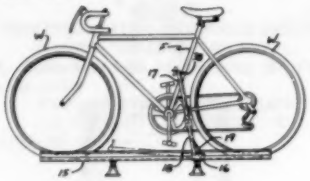
a rear connecting element for interconnecting the shoulder belt, the side belt, and the rear belt at the back side of the planting person; and wherein the frame is inclined from the side arc downwards at an angle of inclination of 40 to 50 degrees, preferably about 45 degrees.

4,452,384

FOLDABLE BICYCLE SUPPORT DEVICE

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Jun. 6, 1983, Ser. No. 501,617
Int. Cl.³ B60D *3/06*
U.S. Cl. 224—314 **11 Claims**



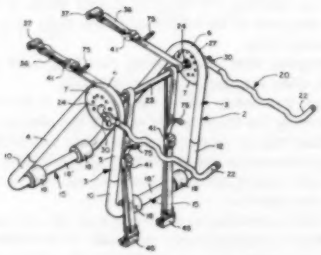
1. A foldable bicycle support device comprising, an elongated upwardly opening channel member adapted to receive the wheels of a bicycle, a mounting bracket attached to said channel member and having a generally flat base and first and second flange portions extending parallel to said channel member at locations spaced laterally from one side of the channel member, an elongated bicycle support member having one end disposed between the first and second flange portions, a pivot pin extending through the first and second flange portions and through said one end of said bicycle support member and pivotally supporting the same for movement between a folded position extending alongside the channel member and a raised position in which the other end of the bicycle support member is spaced above the channel member, a latch member engaging said mounting bracket at a location spaced horizontally from the pivot pin and engageable with the bicycle support member at a location spaced above the pivot pin when the support member is in its raised position for releasably retaining the support member in its raised position, and means on the other end of the bicycle support member for engaging a portion of the frame of a bicycle to support a bicycle in the longitudinal medial plane of the channel member.

4,452,385

CARRIER FOR SUPPORTING PARAPHERNALIA

Gildo G. Prosen, Chicago, Ill., assignor to CMI Models & Development Corp., Skokie, Ill.

Filed Jun. 18, 1982, Ser. No. 389,717
Int. Cl.³ B60R *9/10*
U.S. Cl. 224—321 **2 Claims**



1. An automobile bicycle carrier comprising a pair of generally V-shaped side frames disposed in relatively parallel planes, said side frames each being of one-piece tubular stock and having two straight leg portions converging toward and connected to the ends of an apical portion, a pair of tubular U-shaped base members extending between corresponding legs of said side frames and having tubular end portions telescoped therewith and interconnecting the side frames into a rigid structure,

mounting means fastened on each apical portion and having a center aperture perpendicular to the planes of the side frames and having an arcuate series of openings concentric about the center opening,

and a paraphernalia carrying means having a pair of side elements positioned against the external sides of the respective side frames,

and releasable connectors extending through alignable openings in said elements and respective mounting means for securing the carrying means to the side frames,

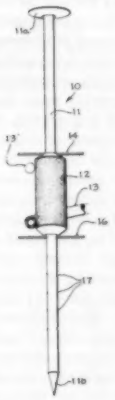
and strap means for attaching the carrier to a vehicle with the base members engaging the vehicle.

4,452,386

HOSE GUIDING ASSEMBLY

Ralph W. McElyea, 741 Castle Hill Rd., Redwood City, Calif. 94061

Filed Sep. 29, 1982, Ser. No. 426,947
Int. Cl.³ B65H *57/14, 57/26*
U.S. Cl. 226—197 **1 Claim**



1. A hose guiding assembly comprising a mounting stake adapted to be driven into the ground, one end of said stake including a portion for receiving driving forces applied to the stake, the other end of said stake being tapered to more readily penetrate the ground, an elongate annular roller carried on said stake adapted to engage and readily turn in response to advancing a hose riding against the surface of said roller, and means for supporting said roller at a selected one of a plurality of positions along said stake, the axis of said roller being coincident with the axis of said stake, the last named means including a series of openings distributed in pairs along said stake, elongate pins disposed in a given pair of said openings, the openings of said given pair being disposed respectively adjacent each end of said roller, each of said pins extending radially to opposite sides of said stake sufficiently to confine the position of said roller between said pair of pins and to prevent the hose from moving to a position axially beyond the ends of said roller.

4,452,387

SELF-CENTERING FASTENING TOOL

Harry M. Haytayan, Lincoln, Mass., assignor to Pneutek, Inc., Hudson, N.H.

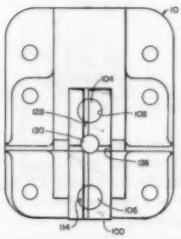
Filed Apr. 15, 1982, Ser. No. 368,658
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—8 **8 Claims**

1. A fastening tool for attaching wire lath to a structural support member with a fastener of the type having a shank and

a head, said tool comprising a fastener driver and a centering block;

said fastener driver comprising (1) a nozzle having an end surface and an internal hammer travelway terminating in an opening in said end surface, (2) a hammer movably disposed within said hammer travelway, and (3) operating means for causing said hammer to move through a drive stroke and a return stroke along said travelway so that a fastener positioned in said travelway can be driven from said nozzle via said opening by said hammer; and

said centering block comprising a front face and a rear face, with said centering block being positioned in front of said end surface so that said front face faces away from said end surface and said rear face faces towards said end surface,



said centering block having a bore extending between said front and rear faces, said bore being in axial alignment with said end surface opening and being sized to pass a fastener discharged from said end surface opening by said hammer;

said centering block also having at least one groove formed in said front face, said at least one groove being positioned on said front face eccentric to the center axis of said bore so that when said tool is brought up against a portion of a wire lath and positioned so that said at least one groove receives at least one wire of said lath and captivates said at least one wire against a support member, the shank of a fastener fired from said fastener driver will pass alongside said at least one wire into said support member and the head of said fastener will anchor said at least one wire of said lath to said support member.

4,452,388

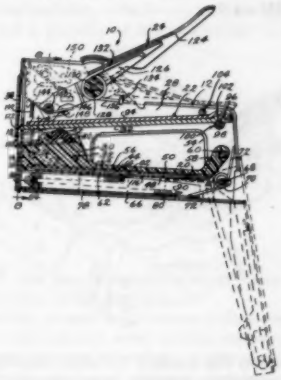
SPRING ACTUATED STAPLE DRIVING DEVICE

William S. Fealey, Jamestown, R.I., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 5, 1982, Ser. No. 405,370
Int. Cl.³ B25C *5/06, 5/10*
U.S. Cl. 227—132 **34 Claims**

17. In a spring actuated fastener driving device comprising a housing defining a drive track, a fastener driving element slidably mounted in said drive track for movement through successive fastener driving cycles, each including a spring stressing stroke in one direction and a fastener driving stroke in an opposite direction, magazine means for receiving a supply of fasteners and feeding a leading fastener of the supply into said drive track during the spring stressing stroke of said fastener driving element for driving thereby during the fastener driving stroke thereof, elongated leaf spring means having one end connected for movement with said fastener driving element, means for connecting an opposite end portion of said leaf spring means with said housing such that said leaf spring means is stressed during the movement of said one end thereof with said fastener driving element through the spring stressing stroke of the latter, and actuating means for moving said fastener driving element through its spring stressing stroke and allowing said leaf spring means to move said fastener driving element through its fastener driving stroke, the improvement which comprises

said actuating means including releasable means engageable with an intermediate portion of said leaf spring means in relatively closely spaced relation to the connection of said



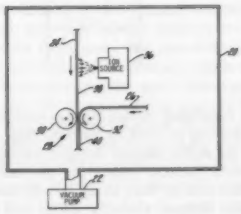
one end thereof with said fastener driving element to move the latter through its spring stressing stroke and releasable therefrom at the end of said spring stressing stroke to allow said fastener driving element to be moved through its fastener driving stroke by the stressed leaf spring means.

4,452,389

METHOD FOR WELDING WITH THE HELP OF ION IMPLANTATION

Kamal E. Amin, Columbia, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 5, 1982, Ser. No. 365,810
Int. Cl.³ B23K *20/00*
U.S. Cl. 228—203 **25 Claims**



1. A method for enhancing welding of at least two metal parts comprising the steps of:

cleaning the surfaces of the metal parts to be joined;

implanting ions into the surface to be welded of at least one of said two parts to a depth of at least 100 angstroms to weaken the chemical and atomic bonds of the surface and near surface atoms; and

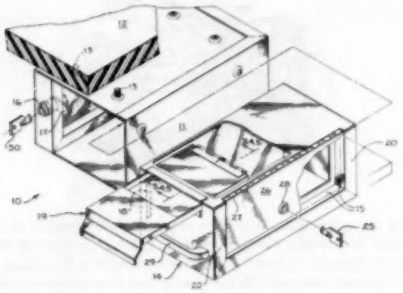
welding said ion implanted surface of said at least one part to a clean surface of the other part.

4,452,390

PORTABLE SECURITY CONTAINER

Robert A. West, Kailua-Kona, Hi., assignor to Boxlox, Inc., San Carlos, Calif.

Filed Jul. 30, 1982, Ser. No. 403,571
Int. Cl.³ A47G 29/14
U.S. Cl. 232—4 R 4 Claims



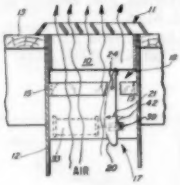
1. A security box assembly for safely receiving and storing currency comprising a hollow, rigid, elongate jacket open at one end, said jacket being adapted to be securely mounted to a support member, a closed security container sized to fit closely within said jacket, locking means for selectively retaining or releasing said container with respect to said jacket, said container including a currency delivery tray movable into and out of said container between inserted and retracted positions, means forming a tray-receiving channel protruding into said container for guiding the movements of said tray, and means for transferring currency from said tray into said container in response to retraction of said tray from said inserted position.

4,452,391

AIR REGULATING DEVICE

Vincent Y. S. Chow, Hanover Park, Ill., assignor to Ellsworth, Chow & Murphy, Inc., Palo Alto, Calif.

Filed Nov. 20, 1981, Ser. No. 323,411
Int. Cl.³ F24F 13/06
U.S. Cl. 236—49 4 Claims



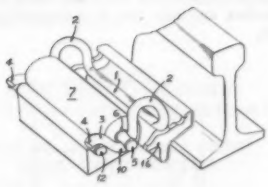
1. An air regulating device for use within an air duct of a forced air heating or cooling system, said regulating device comprising an airfoil shaped damper having a leading edge along one side thereof; means for pivotally mounting said damper within said air duct along an axis parallel to said leading edge; said damper rotatable about said mounting means between an open position, allowing for airflow through said air duct, and a closed position, substantially blocking airflow through said air duct; said damper shape and the placement thereof within said air duct urging said damper to rotate to its closed position when air is flowing through said air duct; restraining means made of a metallic strip attached to and selectively operable to prevent rotation of said damper and magnetizing means secured within said air duct selectively operable for magnetic engagement or disengagement with said metallic strip, whereby said damper is restrained from rotation when said magnetizing means is in magnetic engagement with said metallic strip and said damper is free to rotate when said magnetizing means is disengaged from said metallic strip.

4,452,392

RAIL SPRING CLIP FASTENING ASSEMBLY

Bojji Rajaram; A. R. Bhat, and M. B. Chakravarty, all of Campus of Research, Designs and Standards Organisation, Ministry of Railways, Manaknagar, Lucknow, State of U.P., India

Filed Nov. 4, 1981, Ser. No. 318,119
Int. Cl.³ E01B 9/10, 9/30, 29/24
U.S. Cl. 238—349 5 Claims



1. Rail fastening assembly comprising a resilient clip made out of spring steel rod and a retaining member including a bearing surface, said clip comprising a straight light portion for resting on the foot of a rail and functioning as a toe member, each end of the said straight portion of the rod being first bent upwardly from the toe member to define a pair of arms therewith is a first plane, then bent downwardly to define with said upwardly bent portion a second plane perpendicular to said first plane to form a first curved portion of substantially inverted U-shape, then further extended and bent upwardly in said second plane to form a second central reversed curve of substantially U-shape and yet further extended and bent downwardly in said second plane to thereby form a heel curve terminating in a heel member at each end of the arms of the clip, said retaining member carrying a first pin disposed in a plane parallel to said first plane, said central curves bearing upwardly against said first pin, said heel members defining means for bearing on said retaining member upon engagement with a heel pin inserted between the said heel members and said retaining member bearing surface, whereby after positioning said rail fastening assembly and fitting said heel pin between said heel members and said bearing surface, said heel members are lifted upwardly to thereby produce an upward thrust about said first pin, said upward thrust being converted, through the interaction of said first pin with said central curves, to a downward thrust of the toe member on the rail foot.

4. A rail fastening assembly for fixing the foot of a rail member to a sleeper, comprising:

a resilient, flexible clip having a light forming first bearing surface means for enagaging said rail member foot, a pair of arms forming second bearing surface means, and a first U-shaped portion disposed therebetween, said first and second bearing surface means being directed downwardly;

a retaining member, attachable to said sleeper adjacent said rail member foot, for engagement with said clip, said retaining member including means, projecting laterally therefrom, for engaging said clip first U-shaped portion, said retaining member further including bearing surface means, said clip second bearing surface means normally being in close proximity to said retaining member bearing surface means when said clip is engaged with said retaining member; and

pin means, forcibly insertable between said retaining member bearing surface means and said clip second bearing surface means, for moving said clip second bearing surface means away from said retaining member bearing surface means,

said pin means coacting with said clip second bearing surface

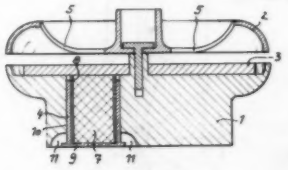
means, said clip first portion and said retaining member engaging means to force said clip first bearing surface means into pressing engagement with said rail member foot.

4,452,393

VAPORIZING DEVICE FOR PERFUMES, INSECTICIDES AND/OR OTHER VOLATILE ACTIVE SUBSTANCES

Georg Schimanski, Hagen; Fritz von Philipp, and Horst Hautmann, both of Neuburg, all of Fed. Rep. of Germany, assignors to Firma Globol-Werk GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 242,221, Mar. 10, 1981, abandoned.
This application May 23, 1983, Ser. No. 497,066
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023017
Int. Cl.³ A61L 9/04
U.S. Cl. 239—57 4 Claims



1. A vaporizing device for perfumes, insecticides and other volatile active substances consisting of a housing having a bowl-shaped lower part, a hood-shaped upper part, and a retention member having a head portion and a stem portion perpendicular thereto, the lower part having a central hollow upstanding boss and the upper surface of the lower part being recessed, a disc-shaped support of absorptive cellular material countersunk in the recess of the lower housing part and of less diameter than the countersink and through which support said boss extends centrally, the hood-shaped upper part having a central upstanding hollow portion with a central opening in its base on which base the head of said retention member rests and from which said stem passes through said opening and through said boss into an opening in the lower part but short of engagement with the bottom of said opening to leave a space therein, the upper housing part having closable arcuate openings radially outwardly of the central upstanding hollow portion, a non-deformable capsule in a capsule-receiving opening in said lower bowl-shaped housing part filled with a removable core of absorptive cellular material for absorption and storage of the active substance inserted in the lower housing portion and having an enlarged flanged base terminating flush with the lowermost surface of the lower housing portion and provided with a closure lid when the capsule is outside the housing but from which capsule the lid is removed prior to insertion in the lower housing part, and finger engagement recesses adjacent the enlarged base for holding the capsule during removal and replacement of the core within the capsule, the core of the absorptive cellular material and the non-deformable capsule being disposed non-centrally of the lower housing part and the housing parts being movable toward and from each other relatively.

4,452,394

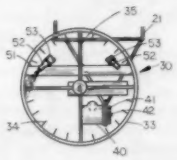
SELF PROPELLED IRRIGATION SYSTEMS

Robert R. Emrich, Box J, Indianola, Nebr. 69034

Division of Ser. No. 129,088, Mar. 10, 1980, Pat. No. 4,368,848.
This application Jan. 17, 1983, Ser. No. 458,534
Int. Cl.³ A01G 25/09
U.S. Cl. 239—177 R 5 Claims

1. An improved power means for a self-propelled center pivot irrigation system having a fixed center pivot, a radially extending distribution pipeline, means for supplying irrigation water to said pipeline, sprinkler means operably disposed along said distribution pipeline, a plurality of carriages disposed to support said pipeline at spaced intervals, each carriage being movably supported on a pair of wheels, drive means for independently moving said carriages and alignment sensing means for actuating said drive means, wherein the improvement comprises,

a turbine wheel including a rim having an inner and an outer surface, and a plurality of blades attached to the inner



surface of said rim, said turbine wheel being operably attached to one of said carriages,

at least one high pressure nozzle means in fluid communication with said irrigation water wherein said nozzle means are operably directed toward the blades of said turbine wheel to cause rotation of said wheel in at least one direction, and

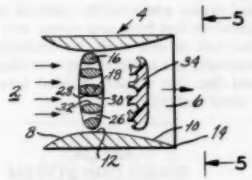
means for controlling the flow of water to said nozzle means.

4,452,395

NOZZLE ASSEMBLY FOR A REACTION ENGINE

Patrick J. Kelly, and Robert D. Hackett, both of St. Charles County, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 2, 1981, Ser. No. 326,496
Int. Cl.³ F02K 1/42
U.S. Cl. 239—265.15 13 Claims



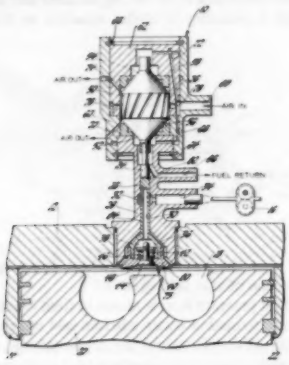
1. A nozzle assembly for a reaction engine, said nozzle assembly comprising: means defining a primary nozzle configured to derive thrust from gases that pass through it; a disc mounted on the means defining the primary nozzle for pivoting movement between an open position and a closed position with respect to the nozzle, the disc permitting gases to flow generally freely from the primary nozzle when the disc is in its open position and generally obstructing the primary nozzle when in its closed position, the nozzle containing surfaces which define at least one secondary nozzle which is configured to derive thrust from gases that pass through it, the total cross-sectional area of the secondary nozzle being less than the cross-sectional area of the primary nozzle, whereby when the disc is in its open position, the thrust is derived from the primary nozzle, and when the disc is in its closed position, the thrust is derived from the secondary nozzle; means for moving the disc between its open position and its closed position; and flow smoothing means on the disc for closing the secondary nozzle when the disc is in its open position so that the gases passing through the primary nozzle flow smoothly over the disc without experiencing excessive turbulence.

4,452,396

FUEL INJECTOR

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 26, 1982, Ser. No. 382,138
Int. Cl.³ F02M *61/18*
U.S. Cl. 239—223 **5 Claims**



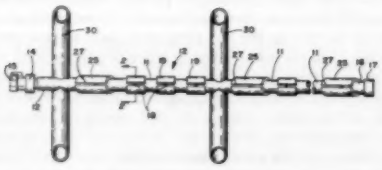
1. An injector for delivering fuel from an injection pump to a variable volume combustion chamber in an air compressing internal combustion engine, said injector comprising a housing having a fuel inlet for periodically receiving fuel from said injection pump, a rotatable assembly including a hollow shaft supported in said housing and defining an axially extending fuel passage having a port for receiving fuel from said housing fuel inlet, one end of said shaft having a cupped portion defining a fuel chamber receiving fuel from said passage, said cupped portion having a disc closing said chamber, said disc having a central fuel orifice, and a valve mounted in said chamber and biased to obstruct fuel flow through said orifice, said valve being adapted to permit fuel flow from said chamber through said orifice and onto the outer surface of said disc as said inlet receives fuel from said pump, and means connected to the other end of said shaft for continually spinning said rotatable assembly at a speed effective to disperse fuel from the edge of said disc into a finely divided spray of substantially uniformly sized fuel droplets.

4,452,397

IRRIGATION SYSTEM

Robert I. Barton, 1610 Deauville Ave., Salt Lake City, Utah 84121

Filed Apr. 1, 1982, Ser. No. 364,210
Int. Cl.³ B05B *1/26, 1/32*
U.S. Cl. 239—455 **11 Claims**



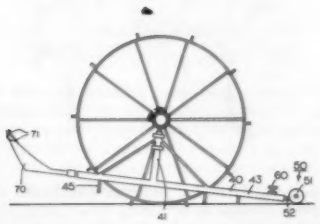
1. An irrigation system for supplying water in selected quantities to selected areas, comprising an elongate pipe having a plurality of water discharge ports spaced therealong; an equal plurality of collar means mounted about the pipe for rotation, each collar means being associated with a different one of said water discharge ports and having an opening therein large enough to completely expose said discharge port, one edge of said opening and the area adjacent thereto being snugly fitted against said pipe so that, as that edge and adjacent area of the collar is progressively moved over its associated discharge port, the port is progressively blocked until it is completely blocked; the opposite edge of said opening being beveled away from the pipe so that, when said beveled surface is over the discharge port, it deflects a stream of water from the discharge port to form a spray; means for connecting one end of the pipe to a source of water; and means for closing the other end of the pipe so that water entering the pipe flows out the discharge ports as controlled by the collars.

4,452,398

PORTABLE IRRIGATION BRAKE

L. A. Wheaton, and Janette Wheaton, both of Green Acres, Phillipsburg, Kans. 67661

Filed Sep. 3, 1982, Ser. No. 414,732
Int. Cl.³ A01G *21/02*
U.S. Cl. 239—712 **10 Claims**



1. A brake mechanism for use on a mobile irrigation system comprising an elongated irrigation pipe supported by a plurality of wheel elements, wherein the brake mechanism comprises;

a first component rotatably secured to the irrigation pipe and having a depending portion projecting therefrom, and

a second elongated generally horizontal component mounted for reciprocal movement with respect to said first component, and having an elongated horizontal member provided with a plurality of ground penetrating means spaced from one another, and from the ends of the horizontal member, and disposed on (its) the lower surface of said horizontal member; wherein the spacing of the ground penetrating means on the horizontal member is such that in at least one position the ground penetrating means will be raised out of contact with the ground during the transportation mode of the mobile irrigation system.

4,452,399

DOUBLE POCKET TICKET ENVELOPE

Donald Schoenleber, Princeton, N.J., and James A. Mattia, Harpers Ferry, W. Va., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Jun. 8, 1983, Ser. No. 502,339
Int. Cl.³ B65D *27/08*
U.S. Cl. 229—72 **1 Claim**

1. A paper double pocket ticket envelope, comprising:

(a) a first rectangular panel including parallel top and bottom edges defining said envelope height and first and second scorelines forming parallel side edges defining said envelope width;

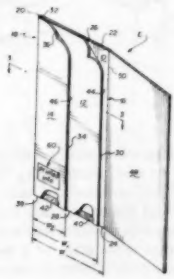
(b) a second rectangular panel having parallel first and second surfaces and a height equal to said first panel height and a width less than said first panel width, said second panel including a first edge abutting said first scoreline and a second edge short of said second scoreline and said second panel further including a bottom edge;

(c) glue means adhesively securing said second panel first

surface bottom edge to said first panel bottom edge for providing a first pocket between first and second panel;

(d) a third rectangular panel integral with and extending from said first panel first scoreline, said third panel having a height equal to said first panel height and a width substantially half said second panel width and said third panel including a bottom edge;

(e) glue means adhesively securing said third panel along the bottom edge thereof to said second panel second surface bottom edge for providing a second pocket between said second and third panels;



(f) a fourth rectangular panel integral with and extending from said first panel second scoreline, said fourth panel having a height equal to said first panel height and width substantially equal to said first panel width whereby said fourth panel adapted for being folded over said third panel to thereby close said envelope; and,

(g) a slit disposed in said first panel intermediate said top and bottom edges and having a width less than said first panel width.

4,452,400

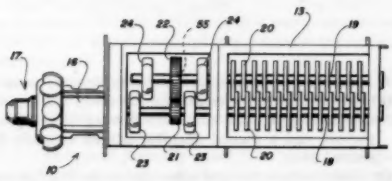
ROTARY SHREDDING APPARATUS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Continuation of Ser. No. 323,807, Nov. 23, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 530,949

Int. Cl.³ B02C *25/00*

U.S. Cl. 241—36 **7 Claims**



1. Rotary shredding apparatus in which counterrotating shafts carry cooperating cutter elements for shredding material, the shredding apparatus comprising:

(a) counterrotating shafts and a reversible hydraulic motor operably connected to the counterrotating shafts for driving the same in a forward shredding motion and in a reverse direction;

(b) hydraulic fluid flow circuit means connected to said reversible motor and including a pump to supply fluid under pressure through said fluid flow circuit means;

(c) a pressure relief valve in said hydraulic fluid circuit means for imposing a predetermined upper limit on the pressure existing in said circuit means between said pump and reversible motor;

(d) motion responsive means in the shredding apparatus for generating signals continuously during the continuance of a forward shredding drive motion of the counterrotating shafts;

(e) hydraulic fluid flow directing valve means connected into said hydraulic fluid flow circuit means to direct the flow of hydraulic fluid at the predetermined pressure limit permitted by said pressure relief valve to said reversible hydraulic motor for determining the direction of drive for the counterrotating shafts; and

(f) control means connected to said motion responsive means and said hydraulic fluid flow directing valve, said control means being operative in response to the continuous generation of signals by said motion responsive means for operating said hydraulic fluid flow directing valve to direct the pressure fluid at the predetermined upper limit in a direction for effecting the drive of said reversible hydraulic motor in a forward shredding motion direction, said control means being responsive to the cessation of signals by said motion responsive means for operating said hydraulic fluid flow directing valve to direct the pressure fluid at the predetermined upper limit in a direction for effecting the drive of said reversible hydraulic motor in a reverse direction for a predetermined time prior to returning to forward shredding.

4,452,401

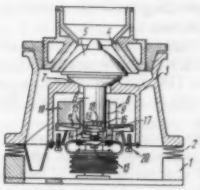
INERTIA CONE CRUSHER

Leonid P. Zarogatsky, Uglovoi pereulok, 5, kv. 21; Boris G. Ivanov, Basseinaya ulitsa, 5, kv. 8; Nikolai A. Ivanov, Novoizmailovsky prospekt, 19, kv. 96; Evgeny S. Mitrofanov, ulitsa Kibalchicha, 4, korpus 1, kv. 17; Andrei N. Safronov, ulitsa Korablestroitelei, 19, korpus 1, kv. 728; Vladimir Y. Turkin, Novoizmailovsky prospekt, 19, kv. 94, and Vladimir A. Cherkassky, ulitsa Rudneva, 3, korpus 1, kv. 38, all of Leningrad, U.S.S.R.

Filed Aug. 31, 1981, Ser. No. 298,012

Int. Cl.³ B02C *2/04*

U.S. Cl. 241—207 **21 Claims**



1. An inertia cone crusher comprising:

a shell installed on a base;

a crushing bowl fastened to said shell;

a breaking head resting on a spherical support formed in an upper portion of said shell, said breaking head having a shaft depending therefrom, said shaft having a bore in its shank;

elastic shock-absorbers intalled between said shell and said base of said shell;

an out-of-balance unit comprising:

a bearing bush installed about the shaft of said breaking head;

an out-of-balance weight fastened to said bearing bush;

a carrier disc arranged under said out-of-balance weight;

a rod for mounting said out-of-balance unit to the shaft of said breaking head, said rod having an upper end and a lower end;

said lower end of said rod being installed on said bearing bush;

said upper end of said rod being installed in the bore of said shank with a clearance with respect to the end face of said

bore permitting axial movement of said rod relative to said shaft; and

means for lifting said out-of-balance unit relative to said shaft and fixing it in the upper position.

4,452,402

ELECTRIC CONTROL FOR YARN FEEDING DEVICES

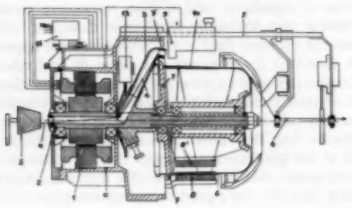
Fiorenzo Ghiardo, Vigliano Biellese, Italy, assignor to ROJ Electrotex S.p.A., Biella, Italy

Filed Jan. 21, 1982, Ser. No. 341,552

Claims priority, application Italy, Jan. 26, 1981, 19318 A/81

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **8 Claims**



1. Apparatus for controlling the feeding of yarn from a spool in a weaving machine, comprising

(a) a conical drum;

(b) electric three-phase motor means (1) having three windings, said motor means including means for winding the yarn about said conical drum at various speeds;

(c) AC power supply means (11) for producing a three-phase voltage for operating said motor means; and

(d) phase control means (12) for controlling the phase of said power supply means to control the winding speed of said motor means, said phase control means including

(1) first means for producing a first signal (V_1) corresponding with a programmed winding speed of said motor means;

(2) second means for producing a second signal (V_{EFF}) corresponding with the actual winding speed of said motor means;

(3) third means for producing a third signal (f) corresponding with the absence of yarn wound on said drum;

(4) means (18) for generating a control voltage signal (V_{CONTR}) in response to said first, second, and third signals;

(5) voltage processing circuit means (α,β, γ) for generating a ramp signal for each phase of said power supply and for comparing each of said ramp signals with said control voltage signal to produce first (a_1), second (a_2), and third (a_3) control signals, respectively;

(6) first (T_1), second (T_2), and third (T_3) triac means responsive to said first, second and third control signals, respectively, for controlling the supply of said three-phase voltage to said three motor windings, respectively, said control voltage signal (V_{CONTR}) being operable to increase the speed of said motor means when said first signal is greater than said second signal, said control voltage signal being also operable to decrease the speed of said motor means when said third signal reaches zero.

4,452,403

DISPENSER FOR MATERIAL ARRANGED IN A ROLL

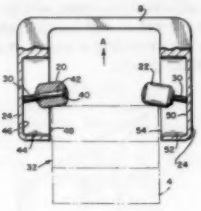
Ernesto Arronte, 360 Williamson St., Elizabeth, N.J. 07201

Filed Oct. 28, 1982, Ser. No. 437,198

Int. Cl.³ B65H *19/02*

U.S. Cl. 242—55.2 **6 Claims**

1. A dispenser for material arranged in a roll for unwinding such as toilet tissue, paper, plastic articles, or the like, said dispenser having a frame and a holder means for holding said roll and permitting rotation thereof about an axis of rotation, said holder means comprising a pair of articulated end pieces pivotally attached to said frame on points coincident with said axis of rotation and arranged so that their free ends are mutually opposed, in alignment along said axis of rotation, and



separated by a distance substantially smaller than the width of said roll, said pair of end pieces being further arranged to loosely engage said roll, and resilient means for effecting said pivotal attachment and for urging said free ends of said end pieces into said alignment, wherein said end pieces are further arranged so that upon application of a predetermined force thereto said free ends deflect laterally out of said alignment.

4,452,404

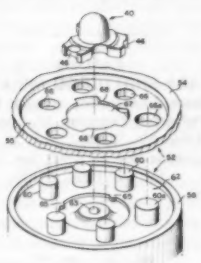
TAPE REEL HUB ASSEMBLY

Anthony L. Gelardi, Cape Porpoise; Gerald W. Nappula, Hollis Center, and James Phillippe, Sanford, all of Me., assignors to Shape Inc., Biddeford, Me.

Filed Aug. 20, 1982, Ser. No. 409,839

Int. Cl.³ B65H *75/14*

U.S. Cl. 242—71.8 **20 Claims**



1. A tape reel for a video or audio tape cassette, comprising:

(a) first and second substantially flat discs, the second flat disc having at least one first opening located radially therein, and a second opening located centrally in the second disc;

(b) a hub having a first end connected to the first flat disc and a second end connected to the second flat disc, the second end having at least one first projection located radially thereon for passing through the at least one first opening located in the second disc, and a second projection located centrally on the second end; and

(c) a pivot button member having a substantially flat base with at least one substantially flat extension projecting radially therefrom and a recess located centrally in the lower surface of the base for receiving the second projection of the hub, and a first projection located centrally on the top surface of the base, the pivot button member being inserted through the second opening in the second disc and twisted such that the top surface of the at least one base extension rests substantially flatly against the bottom

surface of the second disc, and the bottom surface of the at least one extension rests substantially flatly against the second end of the hub.

4,452,405

AUTOMATIC BELT REEL LOCK MECHANISM

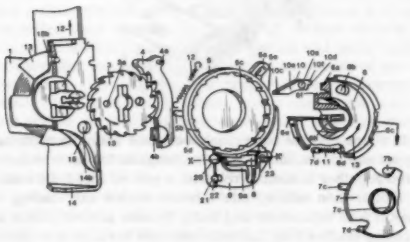
Heinz D. Adomeit, Berlin, Fed. Rep. of Germany, assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 6, 1983, Ser. No. 482,696

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3212992

Int. Cl.³ A62B *35/02;* B65H *75/48*

U.S. Cl. 242—107.4 A 6 Claims



1. An automatic seat belt reel lock mechanism having a main housing, a reel axle rotatably disposed in said main housing, seat belt webbing wound about the reel axle, a wind spring connected to said housing for producing a torque on the reel axle in the direction to wind said seat belt webbing on said reel axle, a locking ratchet wheel attached to said reel axle and rotatable therewith, a locking pawl having one end pivotally attached to the main housing and movable to engage said ratchet wheel, and a control component having a lock/drive disk concentric with the reel axle and independently rotatable thereabout, a cam attached to the lock/drive disk for actuating said locking pawl to engage the ratchet wheel, a vehicle acceleration device responsive to vehicle accelerations exceeding a first predetermined value for causing the cam to actuate the locking pawl and a rotational acceleration device responsive to the rotational acceleration of the reel axle exceeding a second predetermined value for causing the cam to actuate the locking pawl, wherein

said lock/drive disk, has internal gear teeth,

said cam disposed on said lock/drive disk being responsive to the rotation of said lock/drive disk in a predetermined direction to actuate said locking pawl to engage said ratchet wheel;

said control component further including a control gear disposed concentric with the reel axle and attached to said ratchet wheel, said control gear having external teeth about its periphery, and

a control gear pawl pivotally attached to said control gear;

said rotational acceleration device comprising a rotary inertial mass resiliently connected to said control gear, said inertial mass having means for pivoting said control gear pawl to engage the internal teeth of said lock/drive disk and rotate said lock/drive device with said control gear in said predetermined direction in response to the rotational acceleration of said reel axle exceeding said second predetermined value; and

said vehicle acceleration device comprising vehicle acceleration means connected to said lock/drive device for engaging the external teeth of said control gear in response to the vehicle acceleration exceeding said first predetermined value, the engagement of said control gear's external teeth connecting said lock/drive disk to said control gear, thus rotating said lock/drive device in said predetermined direction upon unwinding of said belt for causing said cam to actuate the locking pawl.

4,452,406

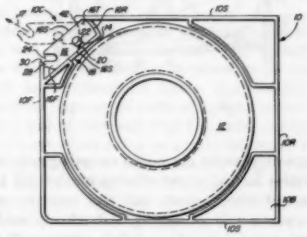
LEADER BLOCK FOR SINGLE REEL TAPE CARTRIDGE

Maurice E. Richard, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,439

Int. Cl.³ G03B *1/04, 1/56;* G11B *15/32*

U.S. Cl. 242—195 37 Claims



13. A magnetic tape cartridge comprising:

an approximate square box having two elongated side pieces, approximate square and planar top and bottom sections and elongated leading edge and rear edge pieces, all of said pieces interconnecting said top and bottom sections for enclosing a tape receiving cavity with a tape access opening to the tape-receiving cavity of the cartridge at one corner of the leading edge and one side piece, said bottom section having a centrally-located drive means opening, and a leader block receiving well disposed across said tape access opening;

a reel rotatably positioned at the approximate center of the box to be accessed for rotation at said drive means opening;

a web of magnetic tape wound on said reel and having a free end;

a leader block having the free end of said web attached on one side of said leader block approximate to its rear surface, said leader block being of a size for capture in the tape access opening in the box in the leader block receiving well;

said leader block having a slot with a length and a depth with the length extending across the full height of and approximate to the leading surface of said leader block, the length being parallel to the axis of rotation of said reel and the depth being perpendicular to the leading edge of the box when said leader block is held within the leader block receiving well, the depth being less in size than the width of said leader block;

said leader block having a cavity at the rear of said slot extending a distance less than the height of the leading surface of said leader block from the bottom, said cavity having a cross-dimension larger than the width of said slot; and

a shoulder in said leader block extending from the width of said cavity to the width of said slot.

4,452,407

TAPE CASSETTE HAVING A REEL BRAKING MECHANISM

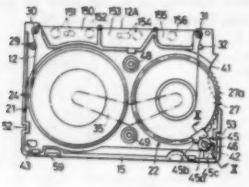
Haruki Ogata, Sagamihara; Kimio Ogawa, and Hiroyuki Umeda, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 21, 1982, Ser. No. 380,819

Claims priority, application Japan, May 29, 1981, 56-77638[U]; Jun. 30, 1981, 56-97117[U]

Int. Cl.³ G11B *15/32, 23/04*

U.S. Cl. 242—198 **10 Claims**



1. A tape cassette for use with a recording and/or reproducing apparatus having a reel driving mechanism including at least one reel driving shaft, said tape cassette comprising a cassette case, a pair of supply and take-up reels provided within said cassette case, for winding a tape, each of said reels at least having a bottom reel flange, a first reel braking mechanism for preventing unnecessary rotation of said supply reel when said tape cassette is not in use, the first reel braking mechanism being released when said reel driving shaft is inserted into said supply reel, and a second reel braking mechanism for preventing unnecessary rotation of said take-up reel when said tape cassette is not in use by applying a braking force on an outer peripheral edge part of the bottom reel flange of said take-up reel,

said first reel braking mechanism comprising:

a first toothed part having crests and valleys, formed on the lower surface of said bottom reel flange of said supply reel; a second toothed part having crests and valleys, formed on a bottom plate of said cassette case at a position opposing the first toothed part of said supply reel; and urging means for urging said supply reel towards the bottom plate of said cassette case so that said first and second toothed parts mesh with each other,

the crests of at least one of said first and second toothed parts being formed with a tapered surface on at least one side thereof,

said urging means having an urging force such that said supply reel receives a rotational force when tension is introduced in said tape which is to be drawn out, the crests of said first toothed part riding over the crests of said second toothed part against the urging force of said urging means,

said second reel braking mechanism comprising a braking member for making contact with and exerting a pushing force against an outer peripheral part at the upper surface of a reel flange of said take-up reel to perform a braking operation with respect to said take-up reel, and means for urging said braking member downwardly, said braking member being displaced upwardly to separate it from the peripheral part of said reel flange and to release the pushing force, in order to release the braking operation with respect to said take-up reel.

4,452,408

TAPE CASSETTE

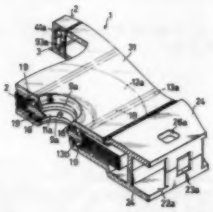
Shin Sasaki, Tagajo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1982, Ser. No. 445,494

Claims priority, application Japan, Dec. 4, 1981, 56-181306[U]; Dec. 4, 1981, 56-181305[U]

Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*

U.S. Cl. 242—199 **13 Claims**



1. In a tape cassette comprising a cassette casing constituted by upper and lower, substantially rectangular halves which are secured together in mating relation, a pair of reel hubs rotatably mounted in side-by-side relation within said casing, a magnetic tape wound on said hubs, friction control sheets in said casing sandwiching said hubs and tape between said upper and lower casing halves, and tape guides in said casing for directing the tape between said hubs in a path extending along one side of the casing; the improvement comprising each of said upper and lower casing halves including an opaque frame having a window opening therein extending over a substantial portion of the extent of the respective frame and a window member of a transparent resin closing said window opening of the respective opaque frame and being secured to the latter adjacent the peripheries of said window opening and window member, respectively, and a plurality of projections formed integrally with said window member of at least one of said casing halves and each extending therefrom in the direction toward the interior of said casing for resisting inward removal of the respective window member from the window opening of the respective frame.

4,452,409

BRAKING SYSTEM FOR A TAPE PLAYER

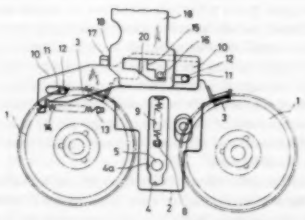
Kazuki Takai, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,331

Claims priority, application Japan, Jun. 15, 1981, 56-87663[U]; Jun. 15, 1981, 56-87671[U]; Jun. 15, 1981, 56-87674[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—204 **7 Claims**



1. A tape player, comprising: a motor; first and second rotatably supported reel bases; selectively actuable means for operatively coupling said motor to a selected one of said reel bases

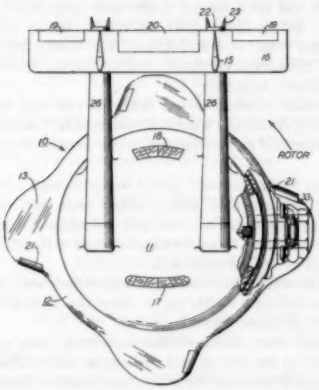
for effecting rotation thereof; a braking member supported for movement in a first direction between a braking position and a retracted position and having thereon a brake shoe, said brake shoe engaging said first reel base to resist rotation thereof when said braking member is in said braking position and being spaced from said first reel base when said braking member is in said retracted position; first resilient means for yieldably urging said braking member toward said braking position; a locking member supported for movement in a second direction different from said first direction between a locking position and a release position; releasable locking means cooperable with said braking member and said locking member when said braking member is in said retracted position and said locking member is in said locking position for releasably holding said braking member in said retracted position, said locking means releasing said braking member as said locking member is moved to said release position; second resilient means for yieldably urging said locking member toward said locking position; a movably supported cam member having a cam surface thereon and means for selectively operatively coupling said motor and said cam member so that said motor effects movement of said cam member; a powering member supported for movement between first and second positions; means cooperable with said cam surface for effecting movement of said powering member between said first and second positions in response to movement of said cam member; means for effecting movement of said locking member to said release position in response to movement of said powering member from said first to said second position; and means for effecting movement of said braking member from said braking position to said retracted position in response to movement of said powering member from said second position to said first position.

4,452,410

IN-LINE GYRO TYPE AIRCRAFT

Robert A. Everett, 704 S. 142 E. Ave., Tulsa, Okla. 74108

Continuation-in-part of Ser. No. 177,094, Aug. 11, 1980, abandoned, and Ser. No. 971,783, Dec. 21, 1978, abandoned.
This application Dec. 18, 1981, Ser. No. 332,319
Int. Cl.³ B64C *27/00, 39/06*
U.S. Cl. 244—12.2 **6 Claims**



1. A fuselage body adapted for powered flight and sustained power-off flight with auto-rotation means, said fuselage body having the general shape of an aerodynamic inverted saucer, in which a continuous circular track is mounted at the periphery of said fuselage body, and mounted to and riding on bearings in said continuous circular track is a circular rotary frame;

said circular rotary frame including an extended airfoil assembly containing multiple airfoils extending from spaced locations around the periphery of said circular frame and radially therefrom, so as to engage the air and develope lifting forces as said extending airfoils rotate about said fuselage body;

said multiple airfoils contain solid weighted bodies within their extreme tips, said solid weighted bodies conforming to the shape of the airfoil tips, and having a density and balance that will produce inertial properties when spinning, to thus create a positive gyroscopic force with stored energy as in a segmented type of gyroscope;

first power means mounted inside the fuselage body and connected to said circular rotary frame and extended airfoil assembly for moving said frame and airfoil assembly along said circular track to create a lift force on said rotating multiple extending airfoils, and said first power means also containing means for the auto-rotation of said rotary frame and extended airfoil assembly;

second power means mounted on the fuselage body in twin booms that extended rearwardly from said fuselage body to provide forward thrust for horizontal flight, and attached to the tail exhaust of said twin booms are torque control vanes, also attached to the tail area of said twin booms beyond the outer circumference of the extending airfoil tips are a tail assembly and control surfaces for said fuselage body;

other control surface means are located on said extending airfoils, said other control surface means including dual purpose flaps which function by means in the downwind quadrant for additional lift forces, and attached to said dual purpose flaps on an outboard edge thereof are trap flaps, one end of each said trap flap being attached to its respective extending airfoil by a slide means and the other end being attached to said outboard edge of said dual purpose flap by a hinge means, that allows both the dual purpose flap and trap flap to open together and close automatically as a unit for trapping the slip-stream pressure, when open in the downwind quadrant, on and between a back surface of the dual purpose flap and a surface of the airfoils at right angle to the direction of flight of the fuselage body, to thus become the power means for auto-rotation of the circular rotary frame and multiple extended airfoils in poweroff flight; and

aerodynamic flap means in the form of a leading edge airfoil type flap mounted on the leading edge of each said extending airfoil by means which can extend said flap forward from the leading edge of said extending airfoil into the slip-stream to develope additional lift only as the extending airfoils pass into the downwind quadrant of said fuselage body.

4,452,411

DEVICES WHICH MAY BE BORNE IN AIR AND IN DEVICES APPLICABLE THEREIN

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Oct. 2, 1981, Ser. No. 308,202
Int. Cl.³ B64C *3/56, 3/38*
U.S. Cl. 244—49 **10 Claims**

1. An aircraft having a body with a longitudinal imaginary vertical medial plane through said body and a pair of first wing portions extending laterally from said body, one wing of said pair in one lateral direction of said plane and the other wing of said pair extending symmetrically in the opposite direction of said plane,

wherein portions of a pair of secondary wings are provided in said craft, while one wing of said pair of secondary wings extends laterally of said medial plane and the other wing of said secondary wings extends from said body symmetrically in the opposite direction of said plane,

wherein each wing portion of said secondary pair of wing portions is provided with a secondary propeller which is revolvably borne and located on the front of the respective portion of said secondary wing portions and thereby also located rearwardly behind the respective portion of said pair of first wing portions, whereby the propeller of

said one wing and the propeller of said other wing of said secondary wings form together a pair of secondary wing propellers,

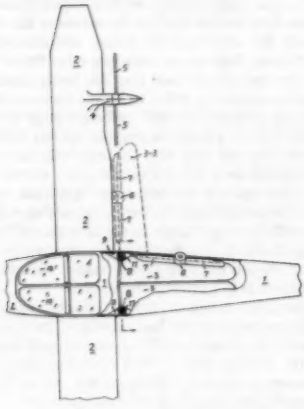
wherein variation means are attached to said secondary wings;

wherein said secondary wing pair includes flexibility arrangements to permit a change of the location or direction of said wings of said secondary pair,

wherein said secondary wings are variable in their position relative to said first wing pair in order to obtain suitable flight conditions of said craft at different speeds of forward movement of said craft,

wherein said secondary wings are located at least partially rearwardly behind said pair of first wing portions and at least temporarily inside of the airflow stream over said pair of first wing portions,

while said flexibility arrangements are provided to vary the characteristic and performance of flow of air over said first wing portions and over said pair of secondary wings,



whereby the ability and attitude of said aircraft is at least partially controlled by said flexibility arrangements and said pair of secondary wings,

wherein said first wing portions are permanently fixed to the body of said craft in fixed angles of chord relative to said body, whereby said angles of chord of said first wing portions are not variable and remain at all times permanently fixed,

wherein said portions of said second wings are pivotable around centers for a pivotal movement with said centers defining pivot axes which are substantially laterally extended from said body and which are substantially parallel to the extension of said first wing portions, and,

wherein said pivot axes are located substantially along the rear portions of said first wing portions and thereby substantially along the front portions of said secondary wings,

whereby the pivotal movements of said secondary wings around said pivot axes actuate and define an inclination of said secondary wings relative to said first wing portions.

4,452,412

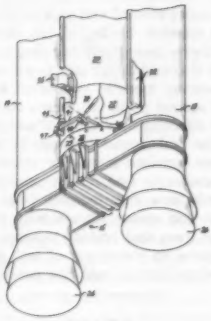
SPACE SHUTTLE WITH RAIL SYSTEM AND AFT THRUST STRUCTURE SECURING SOLID ROCKET BOOSTERS TO EXTERNAL TANK

George L. von Pragenau, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 15, 1982, Ser. No. 418,138

Int. Cl.³ B64G *1/40, 1/14*

U.S. Cl. 244—172 **2 Claims**



1. In a space shuttle having an orbiter spacecraft with main rocket engines, an external tank for propellants parallel to said orbiter spacecraft, and a pair of solid rocket boosters on opposed sides of said external tank, the improvement comprising;

said external tank having a forward cylindrical pressure vessel for holding liquid hydrogen, an aft cylindrical pressure vessel with end domes for holding liquid oxygen, and a cylindrical intertank structure joining the two pressure vessels together;

said forward pressure vessel being parallel and extending ahead of the orbiter spacecraft and said aft pressure vessel being parallel and within the length of said orbiter spacecraft;

said solid rocket boosters joined together with a structural frame adjacent their rocket nozzle ends, said frame extending behind said external tank and adapted to apply the thrust generated by said rocket boosters to the aft cylindrical end of said external tank;

said aft pressure vessel having a cylindrical wall extension which defines a usable space about the aft end dome of said aft pressure vessel;

cylindrical cover means on said structural frame severably secured to the rear of said cylindrical wall extension;

means rigidly securing the orbiter spacecraft to the cylindrical wall of said aft pressure vessel so as to apply the thrust of the rocket engines of said orbiter spacecraft to the structural wall of said aft pressure vessel;

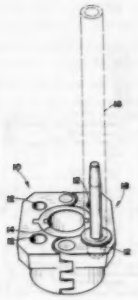
said external tank having a pair of guide rail means positioned axially on its outer surface and adjacent each said solid rocket booster' and

each said solid rocket booster having slider means engaging its adjacent rail means whereby said rocket boosters when depleted may slide backward and disengage from said external tank by severing said cylindrical cover means of the structural frame from said cylindrical wall extension.

4,452,413
APPARATUS FOR TEMPORARILY SUPPORTING DRILLING EQUIPMENT ON A DRILLING RIG FLOOR

Anthony T. Sipes, 4214 S. Wheeling, Tulsa, Okla. 74105

Filed Sep. 28, 1982, Ser. No. 425,432
Int. Cl.³ F16M 11/00
U.S. Cl. 248—176 3 Claims



1. Apparatus for temporarily telescopically supporting drilling equipment, such as a reamer, shock sub, K.C. wiper, or the like on a drilling rig floor having a rotary table, comprising:

a master bushing with a vertical cylindrical recessed opening therein, such as a pin opening, the master bushing being receivable in a rotary table;

a cylindrical base structure of diameter slightly less than said master bushing pin opening and of length less than such opening, the base structure having an upper end and a tapered lower end;

an enlarged diameter flange portion secured coaxially to said base structure upper end, the flange portion having an upper and lower surface, the lower surface engaging the top surface of a master bushing when the apparatus is in use; and

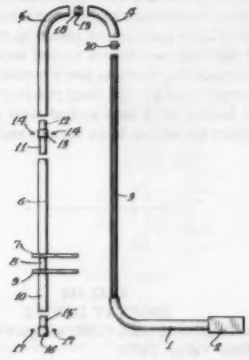
an elongated upstanding portion having a lower end and an upper end, the lower end being affixed to said base structure, and said flange portion being coaxial, the upstanding portion being tapered at the upper end, the upstanding flange portion being of a diameter to telescopically receive thereon an elongated drilling tool having a tubular recess in the lower end, a portion of said upstanding adjacent said flange portion being formed with a rough surface to provide a non-slippery hand hold area.

4,452,414
SUPPORTING DEVICE

Henricus J. Ansems, Spoorwegstraat 14, 6828 AS Arnhem, Netherlands

Filed May 10, 1982, Ser. No. 376,677
Int. Cl.³ E04G 3/00
U.S. Cl. 248—278 2 Claims

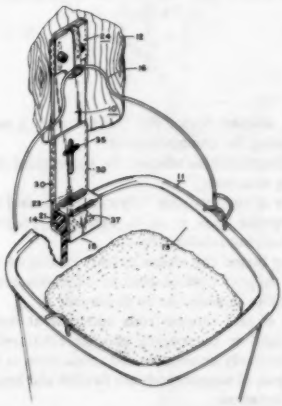
1. A supporting member comprising, a plurality of tubular parts at least some of which are curved and which can be turned relative to each other, a plurality of tubular coupling members for interconnecting said tubular parts, each coupling member having a collar of a larger diameter intermediate its ends whereby a coupling member can have its ends positioned within adjacent ends of two tubular parts with said adjacent ends abutting said collar, and a single biased helically wound tensile spring extending through said tubular parts and tubular coupling members and secured under tension at its opposite ends in two of said tubular parts to produce friction between said coupling member collar and adjacent ends of the tubular parts whereby with torsional tension of said spring and friction between the coupling members and tubular parts said relatively rotatable tubular parts will remain in any desired normal position of use.



4,452,415
BUCKET HOLDER

John E. Arnold, 46909 Peck Wadsworth Rd., Wellington, Ohio 44090

Filed Nov. 23, 1981, Ser. No. 324,046
Int. Cl.³ A47K 1/08
U.S. Cl. 248—312.1 7 Claims



1. In the combination of a bucket holder and a bucket securely carried thereby in an upright attitude, the provision of said bucket having an outurned lip and a bail with the bail having a clasp engageable bail portion positionable over and at a certain distance above said lip, said bucket holder consisting of an elongated generally flat strip provided with upper and lower ends interconnected by a wall engageable center portion spacing the upper and lower ends from each other, at least one of said portions having at least fastener means to secure the holder to a vertical wall with the upper end over the lower end, said lower end being outurned to supportingly interlatch with a bucket lip placed thereon, said upper end supporting a clasp having upturned and downturned clasp portions engaging each other and cooperating to define a bail clasp, said lower end and said clasp extending forwardly of and on a common side of said strip, said downturned clasp portion being considerably longer than and restricted in movement by said

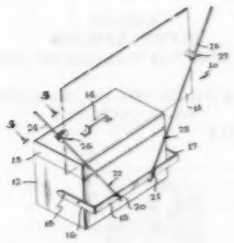
upturned clasp portion, said downturned clasp portion being normally biased against said upturned clasp portion and being separable therefrom when a bail portion is pressed thereagainst to move said downturned clasp portion rearwardly away from said upturned clasp portion and generally towards said center portion of said strip, and thence moved between the upturned and downturned clasp portions into a position in which the bail portion is imprisoned by said clasp portions on said upper end while said bucket lip is interlatched with said lower end to thereby secure the bucket in an upright attitude.

4,452,416

DISPLAY DEVICE

Michael S. Templeton, Simi, Calif., assignor to Wayne K. Templeton, Simi Valley, Calif.

Filed Jan. 21, 1982, Ser. No. 341,513
Int. Cl.³ A47B *97/02*
U.S. Cl. 248—447.2 **2 Claims**



1. A display device for mounting on a support structure comprising the combination of:

an elongated base adapted for securement onto the supporting structure;

a pair of support rods fixly carried on said base between its opposite ends so as to upwardly project therefrom in diverging relationship;

spring biased clip means slidably carried on each of said pair of support rods adapted to releasably retain materials or articles intended to be displayed;

each as said support rods comprise at least two rods arranged in telescoping slidable relationship so as to be selectively extendable and retractable to desired lengths;

said pair of support rods are flexible and bendable to desired orientation;

said clip means includes a pair of jaw members joined at their mid-sections to provide a pivot connection;

spring means disposed between opposing jaw ends to normally bias the opposite jaw ends together via said pivot connection to effectively grip the materials or article intended to be displayed;

said clip means further includes an enlarged portion disposed on one end of a selected jaw;

said enlarged portion provided with a hole for slidably receiving said supporting rod associated therewith; and

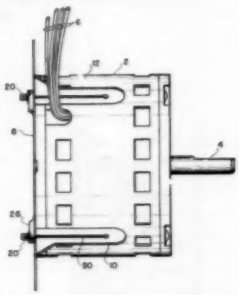
said spring means comprising an expansion helical spring compressed between said associated supporting rod and said jaw opposite to said jaw provided with said hole so as to place a yieldable pressure against said supporting rod and to pivot said jaws on the opposite end of said body to about said pivot connection to effect a releasable closure therebetween.

4,452,417

VIBRATION ISOLATING MOTOR MOUNT

Brian C. Krafthefer, Minneapolis, and Rolf L. Strand, White Bear Lake, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 14, 1981, Ser. No. 301,630
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—604 **10 Claims**



1. A motor mount comprising

a U-shaped mount having parallel legs terminated in right-angle ears,

a motor support plate arranged to be attached to the end of a motor with a plane of said plate being perpendicular to the axis of rotation of the motor,

a motor support frame,

means for attaching a first one of said ears to said plate to orient said U-shaped mount perpendicular to said plane of said plate with said legs being parallel to the axis of rotation of the motor and a plane of said parallel legs substantially co-planar with the axis of rotation of rotation of the motor and

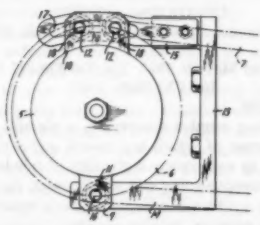
means for attaching a second one of said ears to said motor support frame.

4,452,418

MOUNTING STRUCTURE FOR COMPRESSOR FOR CAR COOLER

Koji Urushihara; Yoshihito Okada, and Haruyuki Komori, all of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Aug. 21, 1981, Ser. No. 295,012
Claims priority, application Japan, Sep. 12, 1980, 55-130190[U]
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—666 **12 Claims**



1. A mounting mechanism for a compressor for a car cooler for mounting the compressor in a car engine compartment comprising: fixed plates projecting from an outer periphery of the compressor; at least two mount stay members fixed inside the engine compartment and spaced at substantially the same

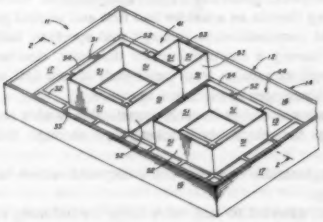
distance as the outer periphery of the compressor and fixed to respective ones of the fixed plates by bolts extending in parallel with a driving shaft of the compressor to define mount stay member and fixed plate pairs; an elliptic hole formed in the mount stay member of one pair to enable the position of the compressor to be adjusted by pivoting the compressor around the bolt which fixes another mount stay member and fixed plate pair, said elliptic hole having a toothed surface at the inner peripheral surface thereof, a stopper member mounted on the fixed plate of said one pair and engageable with the toothed surface to determine the relative position of the mount stay member and the fixed plate of said one pair, and said elliptic hole being inclined at a predetermined angle relative to the pivotal direction of the compressor.

4,452,419

MODULAR CAKE PAN

Burvelle E. Saleeba, 7010 Cherrytree Ave., Citrus Heights, Calif. 95610

Filed Aug. 5, 1982, Ser. No. 405,489
Int. Cl.³ B29C *1/00*; A21B *5/02*
U.S. Cl. 249—53 R **4 Claims**



1. A variable, modular cake pan for forming cakes in the shape of letters or numbers, comprising:

(a) four upstanding sidewalls defining a frame, a bottom panel member, said frame and said panel member forming a mold cavity;

(b) said panel member having a peripheral groove, at least two longitudinal grooves and six transverse grooves within the area surrounded by said peripheral groove so that the groove surface of said panel member is divided by said grooves into at least 21 equal squares;

(c) at least one square member defined by four upstanding walls enclosing an area equal to at least two of said squares when placed on said panel,

(d) at least a second square member defined by four upstanding walls and enclosing an area equal to one of said squares when placed on said panel,

(e) all of said square members having edges matching said grooves and being receivable into said grooves;

(f) whereby, said square members, said panel and said frame define said cake pan with areas excluded by said square members forming a cavity for receiving cake batter.

4,452,420

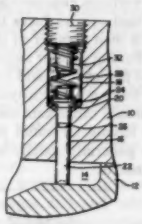
COMPENSATING CORE PIN FOR PLASTIC INJECTION MOLDS

Lynn Lundquist, 10833 NE. Russell St., Portland, Oreg. 97220

Filed Sep. 30, 1982, Ser. No. 431,043
Int. Cl.³ B29C *1/06*
U.S. Cl. 249—175 **15 Claims**

1. A compensating core pin for use in a plastic injection mold for forming a hole through a part as it is formed in the mold, the mold including opposing first and second base members positionable in either an open position wherein the base members are separated or in a closed position wherein the base members are together and form an injection molding cavity between the inner faces thereof, the core pin comprising:

(a) a shaft mounted longitudinally slidably in the first base member and extending through the cavity and abutting and sealing against the inner face of the second base member when the base members are in the closed position, the shaft having constant dimension throughout the mold cavity; and



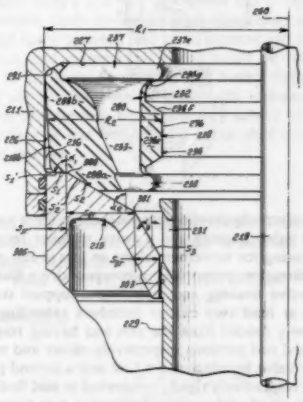
(b) spring means biasing the shaft toward the second base member.

4,452,421

WELL BLOWOUT PREVENTER, AND PACKING ELEMENT

Wai J. Huey, Los Angeles; Fernando Murman, Rancho Palos Verdes, and Eugene Matsuda, Laguna Hills, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 277,341, Jun. 25, 1981. This application Jan. 4, 1982, Ser. No. 337,063
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 B **24 Claims**



1. In an annular blowout preventer packer unit having a longitudinal axis, the packer unit adapted to be compressed during axial advancement of a piston in a housing, the combination comprising

(a) metallic inserts generally circularly spaced about said axis, the inserts having webs that extend generally longitudinally, and

(b) an annulus of elastomeric material extending about said axis and embedding said webs so that the webs anchor the material during displacement thereof, the annulus having a bore,

(c) the annulus having a first body section to be radially inwardly displaced by the piston during its axial advancement, and a second body section to be axially compressed

by the piston during its advancement so that the second body section compressively engages inner surface extent of the housing, said first and second body sections being integral and in longitudinal alignment prior to said compression of the packer unit by the piston,

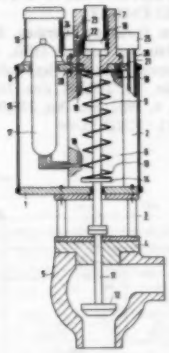
(d) and including said piston having multiple interior frusto-conical cam surfaces engageable with said first body section, one of said cam surfaces located at greater spacing from said axis than another of the cam surfaces, said one cam surface having greater angularity relative to said axis in axial radial planes than said other cam surface, said one cam surface having axial projection of greater radial dimension than said other cam surface,

(e) said piston having an initial position wherein said one cam surface generally axially and openly faces toward ends of the inserts.

4,452,422
ELECTROHYDRAULIC ACTUATING DRIVE FOR VALVES

Werner Trassl, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,910
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 8121690[U]
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—25 **12 Claims**

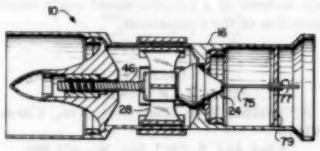


1. An electrohydraulic actuating drive for a valve that includes a valve housing and a valve member received in the valve housing for movement along an axis in and opposite to a closing direction, comprising a compact drive block mounted on the valve housing and including a support structure that includes at least two carrier members extending along and transversely spaced from the axis and having respective first and second end portions respectively closer and more remote from the valve housing, and a first and a second plate-shaped end wall respectively rigidly connected to said first and second end portions of said carrier members; a non-carrying removable tubular circumferential wall surrounding said support structure in sealed contact with said end walls to form a storage receptacle for a low-pressure hydraulic fluid therewith; a hydraulic actuating cylinder-and-piston unit including a cylinder mounted on said support structure at said second end wall and a piston rod passing through said storage receptacle between said carrier members and connected to the valve member; a force storage spring accommodated in said storage receptacle between said carrier members and urging said valve member in the closing direction; and means for operating said hydraulic actuating unit mounted on said support structure and including an electro-hydraulic transducer, a hydraulic pump having a low-pressure side connected to said storage receptacle and a high pressure side, an electric motor connected to said hydraulic pump for driving the same and at least one hydraulic pressure storage connected to said high-pressure side of said hydraulic pump and to said hydraulic actuating unit.

4,452,423
MAGNETICALLY ACTUATED VALVE

James C. Beblavi, Littleton, Colo., and Laurence O. Williams, Orlando, Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 3, 1982, Ser. No. 404,808
Int. Cl.³ F16K *31/10, 1/48, 1/02*
U.S. Cl. 251—65 **12 Claims**



1. A magnetically actuated valve comprising:

(a) a one-piece, generally cylindrically-shaped valve body defining therein an aperture and first and second passages in fluid communication through said aperture, said valve body having a stepped interior diameter, decreasing in diametric dimension from outer ends of said first and said second passages toward said aperture;

(b) a sealing member linearly translatable within said first passage for selectively blocking flow through said aperture;

(c) a magnetically operable rotor disposed within said first passage;

(d) means external to said valve body for inducing rotation of said rotor;

(e) a screw and nut arrangement disposed within said first passage for converting rotational motion of said rotor into linear motion of said sealing member; and

(f) a holding ring, the radially outer portion thereof being attached within said first passage to a stepped portion of said interior of said valve body, and wherein said holding ring, said sealing member, said rotor, and said screw and nut arrangement are configured for being insertable from an outer end of said first passage into said valve body and said sealing member, said rotor, and said screw and nut arrangement are supported by said holding ring.

4,452,424
ELECTROMAGNETIC LINEAR CONTROL VALVE

Shoji Kawata, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 110,552, Jan. 8, 1980, abandoned. This application Feb. 25, 1983, Ser. No. 469,692
Claims priority, application Japan, Jan. 19, 1979, 54-5226
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **2 Claims**

1. An electromagnetic linear control valve comprising:

a housing having inlet and outlet ports;

valve means disposed within said housing for controlling the quantity of fluid flow from said inlet port to said outlet port; and

a linear motor associated with said valve means for operating said valve means in response to an input current from an electric control circuit, wherein said valve means further comprises:

a valve seat member positioned between said inlet and outlet ports and having an elongated opening formed therein to permit flow of fluid therethrough, and

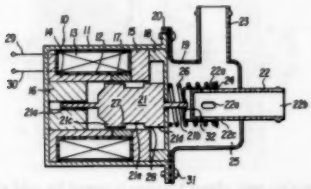
a valve member cooperating with said valve seat member to

control an opening area of said valve seat member, and wherein said linear motor comprises:

a bobbin and a solenoid wound on said bobbin and connected to said electric control circuit;

yoke means of magnetic material including a first yoke extending into an inner peripheral portion of said bobbin and supported on said bobbin;

a core of magnetic material movably mounted on first and second spaced-apart bearing members of non-magnetic material mounted in said housing and disposed only at each axial end of said core along the axial direction thereof and operatively connected with said valve means so as to form a gap for providing a magnetic path of said solenoid in the radial direction of movement of said core between an inner peripheral portion of said yoke means and an outer peripheral portion of said core;



said core further comprising first and second large diameter portions each having outer peripheral surface portions and a small diameter portion disposed therebetween such that said outer peripheral surface portions of said large diameter portions and an inner peripheral portion of said yoke means form said gap for providing a magnetic path between said core and said yoke means wherein said yoke means and said first and second large diameter portions of said core overlap in equal amounts such that the amount of said overlap changes in response to the axial displacement of said core;

spring means biasing said core in an axial direction; and

said yoke means further comprising a second yoke, said first yoke and said second yoke being separately positioned in said axial direction.

4,452,425

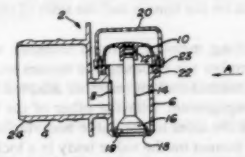
PLASTIC DIAPHRAGM TAP

Anthony J. Lucking, London, England, assignor to Waddington & Duval Limited, London, England

Continuation of Ser. No. 792,576, May 2, 1977, abandoned, said Ser. No. 792,576, is a continuation-in-part of Ser. No. 729,903, Oct. 6, 1976, abandoned, said Ser. No. 729,903, is a continuation of Ser. No. 531,474, Dec. 11, 1974, abandoned. This application May 6, 1982, Ser. No. 375,355

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—144 **2 Claims**



1. A three part tap for dispensing a commestible liquid such as wine, said tap being connectable to a container for said commestible liquid, said tap comprising

a molded tubular tap body open at one end thereof to define a fluid outlet in the form of a valve seat, said valve seat having a generally frusto-conical cross-sectional configuration, said tubular body being fabricated of a relatively low gas permeability plastic material for reducing oxygen penetration through said body into a container connected with said tap, said low permeability tending to reduce contamination and decay of a commestible liquid stored in that container to which said tap is connected,

a flexible resilient diaphragm connected to the other end of said body, said body being closed at said other end by said diaphragm, and said diaphragm being fabricated of a relatively high gas permeability material relative to said low gas permeability material in order to provide finger pressure flexibility to said diaphragm, said diaphragm constituting a first part,

a tubular inlet molded integral with a wall of said body between said diaphragm end and said outlet end, said section being connectable to said container for connecting said tap to said container, and said section defining a fluid inlet to said body from said container when connected with said container, said body and said section constituting a second part, and

a valve element connected by a shank to said diaphragm, said valve element constituting a third part and having a frusto-conical configuration adapted to close said valve seat, finger pressure on said diaphragm allowing the normal resilience of said diaphragm to retain said valve element against said valve seat for closing said tap, the configuration of said valve seat and valve element cooperating so that said valve element self-centers against said valve seat to close said tap in dripless fashion time after time when no finger pressure is exerted on said diaphragm, and said body's outlet and said valve element being structured so that the external edge surface of said valve element extends beyond said body's one end when said tap is open, and retracts back and is substantially flush with said body's one end when said tap is closed, said substantially flush closure position eliminating any external dead space between said valve element and said outlet in which said commestible liquid could be retained by virtue of the surface tension of said liquid, thereby eliminating the accumulation of potentially contaminated or decayed commestible liquid that may adhere to the exterior surface of said body at said outlet after one or more uses of said tap.

4,452,426

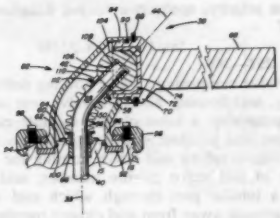
BENT BELLOWS SEALED ROTARY VALVE

James R. Owoc, Pittsburgh, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Mar. 11, 1982, Ser. No. 357,258

Int. Cl.³ F16K *41/10*

U.S. Cl. 251—335 B **11 Claims**



1. A valve comprising,

a valve body,

a passageway extending through said valve body for the flow of fluid therethrough,

a valve member positioned in said passageway for rotatable

movement about a first axis between an open position and a closed position to open and close said passageway,

actuating means rotatable in an orbital path about said first axis for moving said valve member between an open position and a closed position,

a unitary valve stem extending between said valve member and said actuating means,

said unitary valve stem having a lower end portion aligned with said first axis and connected to said valve member for rotation with said valve member about said first axis,

said unitary valve stem having an upper end portion aligned with a second axis and connected to said actuating means,

a bearing assembly retained in said actuating means for supporting said unitary valve stem upper end portion,

an internally pressurized bellows surrounding said unitary valve stem, said bellows having a lower end portion and an upper end portion,

a primary pressure boundary formed by said bellows around said valve stem to prevent the escape of fluid from said passageway through said bellows,

said primary pressure boundary at said bellows lower end portion including a bellows plate surrounding said valve stem lower end portion and sealingly connected to said valve body, said bellows lower end portion being welded to said bellows plate to form a hermetic seal around said valve stem lower end portion,

said primary pressure boundary at said bellows upper end portion including a bellows cap received within said actuating means and surrounding said valve stem upper end portion to permit rotation of said valve stem upper end portion relative to said bellows cap, said bellows upper end portion being welded to said bellows cap to form a hermetic seal around valve stem upper end portion,

a secondary pressure boundary surrounding said bellows to back-up said primary pressure boundary and prevent the escape of any fluid from said primary pressure boundary to the surrounding atmosphere,

said secondary pressure boundary including said actuating means and a rotatable housing connected in surrounding relation with said bellows at an upper end to said actuating means and at a lower end to said body,

said housing having a configuration corresponding to the configuration of said bellows and said valve stem,

said housing upper end being sealingly connected to said actuating means to rotate with said actuating means as said valve is opened and closed, and

said housing lower end being rotatably positioned on and sealingly connected to said valve body to permit said housing to rotate about said first axis as said valve member mover between said open and closed position.

4,452,427

VALVE

John W. M. Webb, Rotherham, England, assignor to Bestobell (U.K.) Ltd., Lough Berks, England

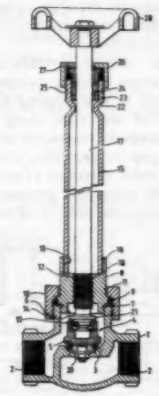
Filed Jul. 2, 1981, Ser. No. 279,730

Claims priority, application United Kingdom, Jul. 3, 1980, 8021857

Int. Cl.³ F16K *31/44*

U.S. Cl. 251—366 **9 Claims**

1. A valve comprising a valve housing defining a fluid passageway, said housing having a valve seat surrounding said fluid passageway; a valve closure member cooperating with said valve seat to close said passageway; a valve actuating spindle supported by said valve housing for controlling the position of said valve closure member, said valve housing having a tubular part through which said valve actuating spindle extends away from said closure member; a gland seal, comprising an annular packing and a gland, which seals said spindle to said housing; and a gland seal housing, wherein said tubular part of said valve housing has first and second ends, said first end being relatively nearer to said valve seat than said second end, said gland seal housing being defined by said second end, said second end of said tubular part having a wall part which is displaced radially inwardly to form, within said tubular part, a constriction spaced from said spindle, said constriction defining an abutment towards which said annular



packing within said gland housing is urged by said gland fitted to said gland housing, and wherein the thickness of the wall of said tubular part of said valve housing is uniform throughout its length.

4,452,428

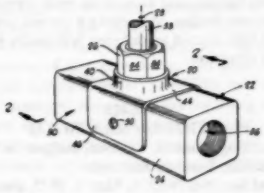
BONNET LOCKING SYSTEM FOR A VALVE

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Filed Dec. 24, 1981, Ser. No. 334,425

Int. Cl.³ F16K *5/00*

U.S. Cl. 251—367 **7 Claims**



1. A bonnet lock for a valve having a valve body and a bonnet that screws into the valve body between opposed sides of the valve body, said bonnet characterized as having a plurality of angularly related facets formed thereon parallel to the screw axis of the bonnet into the valve body, comprising:

a first locking member adapted to engage and mate with one of the facets on the bonnet and the sides of the valve body; and

a second locking member, formed unitarily with the first locking member via stamping the bonnet lock from sheet metal, the second locking member adapted for deformation into engagement with the other of the facets on the bonnet and the sides of the valve body to fix the orientation of the bonnet on the valve body in a locking configuration of the bonnet lock on the valve wherein the facets on the bonnet and the sides of the valve body are both engaged by portions of the bonnet lock; and

wherein portions of the bonnet lock engaging the bonnet in the locking configuration of the bonnet lock on the valve are characterized as having an aperture formed therethrough to receive the bonnet and other portions of the bonnet lock are

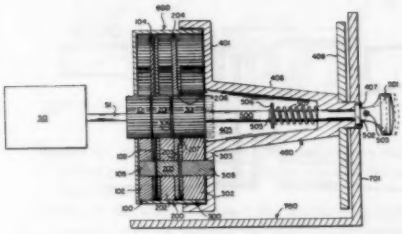
folded to engage the sides of the valve body in the locking configuration of the bonnet on the valve.

4,452,429

PLANETARY GEAR WINCH COMPRISING SELECTIVELY OPERABLE FREEWHEEL ARRANGEMENT

Dan C. Muessel, Danvers, Mass., assignor to Rule Industries, Inc., Gloucester, Mass.

Filed Dec. 4, 1981, Ser. No. 327,344
Int. Cl.³ B66D *1/22*
U.S. Cl. 254—344 **10 Claims**



1. In a planetary gear winch construction comprising a prime mover coupled to a planetary gear reduction drive train, said drive train comprising at least two planetary gear reduction stages, the final one of said stages being coaxially coupled to a winch drum and each planetary gear reduction stage comprising an input sun gear, a plurality of planet gears journalled in a planet carrier therefor and a fixed ring gear, said planet gears being arranged about and engaged with said sun gear and said ring gear surrounding and being engaged with each of said planet gears, the improvement which comprises a selectively operable freewheel arrangement comprising:

the planet carrier of the penultimate planetary gear reduction stage comprising a centrally located internal gear;

the sun gear of the final planetary gear reduction stage being slidably engageable with said internal gear of said planet carrier of said penultimate planetary gear reduction stage;

a selector shaft having upstream and downstream ends;

said sun gear of the final planetary gear reduction stage being journalled to the upstream interior end of said selector shaft;

said winch drum having a drum element comprising a passageway for receiving said selector shaft therethrough in freely slidable relationship therewith, the downstream end portion of said shaft terminating exteriorly of said passageway;

the exterior end portion of said selector shaft having means for manipulating said shaft to and fro within said passageway;

said selector shaft comprising two-position stop means defining a first engaged position and a second disengaged position of the sun gear journalled thereto with respect to said internal gear.

4,452,430

SAFETY DEVICE FOR LOWERING PERSONS AND LOADS

Matti K. Kankkunen, Yliskyläntie 5 B 11, SF-00840 Helsinki 84, Finland

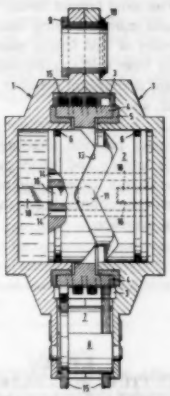
Filed Feb. 25, 1982, Ser. No. 352,219
Claims priority, application Finland, Mar. 3, 1981, 810661; Mar. 3, 1981, 810662
Int. Cl.³ A62B *1/12*; B66D *1/28*
U.S. Cl. 254—391 **12 Claims**

1. A safety device for lowering persons and loads, which comprises

a casing defining a cylindrical cavity;

a cable drum rotatably mounted on the casing for rotation about the longitudinal axis of the cylindrical cavity, and for holding a cable wound on the drum, said drum being adapted to rotate about said axis in response to tension on the cable due to the weight of persons and loads being lowered thereon;

a piston fitted into the cylindrical cavity so as to be free to move parallel to the longitudinal axis of the cavity only;



flow channels connecting one side of the piston to the other to enable flow of a fluid medium therebetween;

a groove of approximately sinusoidal form extending about the outer circumferential surface of the piston; and

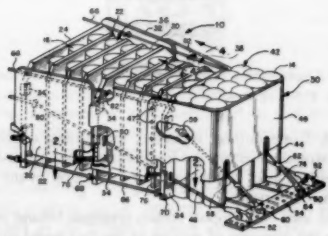
at least one pin connected to the cable drum for rotation therewith about said outer circumferential surface of said piston, and said pin being engaged in said groove in said piston so as to cause reciprocating movement of the piston within the cavity when the cable drum rotates in response to said tension on the cable.

4,452,431

RESTORABLE FENDER PANEL

Barry D. Stephens, Citrus Heights, and Peter B. Morehead, Sacramento, both of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed May 19, 1982, Ser. No. 379,869
Int. Cl.³ A01K *3/00*; E01F *15/00*
U.S. Cl. 256—13.1 **7 Claims**



1. A reusable impact attenuation device comprising:

a rigid backing member;

a plurality of buffer elements positioned in an ordered array extending forwardly of said backing member;

a plurality of diaphragm members interposed in said array at spaced intervals with the opposed ends of at least prese-

lected ones of said diaphragm members extending laterally outward of said array;

a plurality of fender panel members pivotally coupled to opposed ends of selected diaphragm members, the panel members extending rearwardly from their associated diaphragm member and partially overlapping the panel member associated with the succeeding diaphragm member;

non-rigid means interconnecting said backing member and said diaphragm members;

said diaphragm members being constructed to telescope in response to an axial impact force;

said fender panel members being designed so that said overlapping portion of said fender panel member moves outwardly away from said overlapped panel member associated with said diaphragm member in response to an axial impact force; and

biasing means for biasing said fender panels laterally inward to a pre-impact position abutting an associated fender panel and for causing said fender panels to move inwardly after an axial impact force to said pre-impact position, said biasing means interconnecting each of the fender panels to a diaphragm member.

4,452,432

FLAME CUTTING ROLLERBED FOR USE IN CONTINUOUS METALLIC STRAND CASTING MILLS

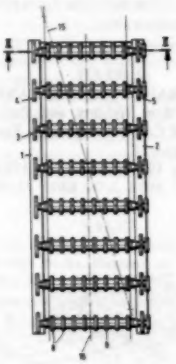
Klaus-Peter Ehlert, Moers, and Dietmar Zebrowski, Straelen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 404,692

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1981, 3131830; May 19, 1982, 3218925

Int. Cl.³ B23K *7/02*

U.S. Cl. 266—50 **8 Claims**



1. A flame cutting rollerbed for cutting continuous cast metal strands in either the longitudinal and/or traverse direction with respect to the direction of motion of the cast metal strands, comprising

(a) at least two support rollers arranged behind one another in the direction of motion of the cast metal strands;

(b) each of said support rollers being provided with uniformly spaced-apart disk rollers for providing direct support to the cast metal strands; and

(c) the sections of said support rollers located between said disk rollers having porous protective coating which is heat resistant.

4,452,433

CARRYING TOWER ARRANGEMENT FOR A METALLURGICAL VESSEL

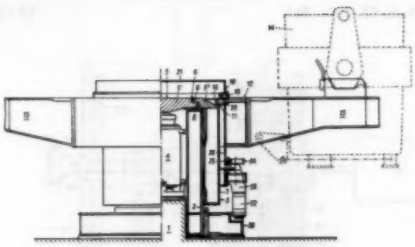
Gerhard Mühlbauer, Steyr; Franz Kagerhuber, Hörsching; Werner Glatz, Enns; Erich Felbermayer, Wels, and Leo Kim, St. Florian, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 4, 1982, Ser. No. 432,431

Claims priority, application Austria, Oct. 9, 1981, 4346/81

Int. Cl.³ B25J *11/00*

U.S. Cl. 266—142 **6 Claims**



1. In a carrying tower arrangement for a metallurgical vessel, in particular for a casting ladle of a continuous casting plant, of the type including a non-rotatable carrying column, at least one carrying arm cantilevering from said non-rotatable carrying column and pivotable thereabout, at least one metallurgical vessel held by said carrying arm, and a pivot bearing means provided between said carrying column and said carrying arm, the improvement wherein said carrying column comprises a supporting surface on an upper end thereof, and wherein said pivot bearing means comprises a single pivot bearing accommodating axial forces, radial forces and tilting moments, said single pivot bearing including

a first bearing race having a lower-side shoulder resting on said supporting surface,

a second bearing race,

means for mounting said carrying arm so as to be suspended from said second bearing race, and

roller means interposed between said first and second bearing races comprising at least one row of axial rollers and at least one row of radial rollers.

4,452,434

COMBINATION OF A SMELTING-FURNACE POURING LIP AND CASTING GUTTER

Onni Santanen, Pori, Finland, assignor to Outokumpu Oy, Outokumpu, Finland

Filed Mar. 11, 1982, Ser. No. 357,208

Claims priority, application Finland, Mar. 27, 1981, 810958

Int. Cl.³ C21C *5/52*

U.S. Cl. 266—159 **7 Claims**

1. A combination of a smelting-furnace pouring lip and casting gutter, which is intended to ensure maximum removal of deleterious gaseous substances from a smelting and casting system including a smelting-furnace, the combination comprising:

an enclosed casting gutter;

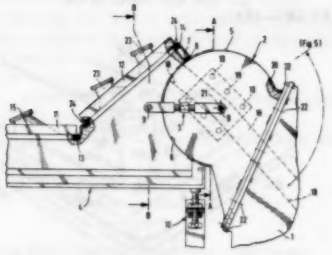
a pouring lip affixed to the smelting-furnace and including means defining a conduit providing continuous communication between the furnace and casting gutter;

joint means hingedly connecting the pouring lip to the casting gutter so that the furnace and pouring lip can be tipped as a unit about the casting gutter to pour melt from the furnace through the conduit into the casting gutter;

sealing means including complementary sealed joint surfaces for interfacing the pouring lip and casting gutter so that the pouring lip can tip about the casting gutter in such a

manner that sealing contact between the joint surfaces is maintained, in order to form a system which is substantially closed but opens into the smelting-furnace via the conduit;

means for admitting shield gas into the casting gutter;



means for inducing a flow of gases and vapors, including the shield gas, from the casting gutter through the conduit and into the furnace; and

means in the smelter-furnace for discharging said gases and vapors from the furnace and thereby substantially removing said deleterious gaseous substances from the entire system through the furnace.

4,452,435

APPARATUS FOR CONTROLLING FRICTION BETWEEN LEAF SPRINGS OF A LAMINATED LEAF SPRING ASSEMBLY

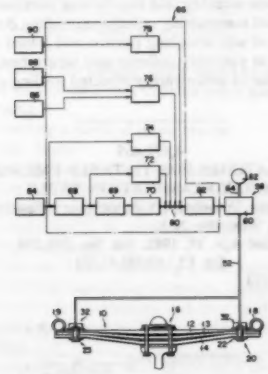
Takeyoshi Shinbori, Yokosuka, and Yoshio Kimura, Yokohama, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 18, 1982, Ser. No. 379,470

Claims priority, application Japan, May 27, 1981, 56-80597; May 27, 1981, 56-80598

Int. Cl.³ B60G *11/02*

U.S. Cl. 267—36 A **4 Claims**



1. An apparatus for controlling friction between leaf springs of a laminated leaf spring assembly, comprising:

clamping means mounted on the laminated leaf spring assembly, which is attached at both ends thereof to a body to be supported to elastically support the body to be supported, for clamping said laminated leaf spring assembly in the direction of thickness thereof, said clamping means including a spring supporting member and a pressure member which clamp said laminated leaf spring assembly therebetween;

hydraulic cylinder means for pressing said pressure member to urge said laminated leaf spring assembly against said spring supporting member, said hydraulic cylinder means including a cylinder having a closed end side and an open end side, a piston having an integrally formed head for dividing an interior of said hydraulic cylinder into a head chamber located on the closed end side of said hydraulic cylinder and a rod chamber located on the open and side of said hydraulic cylinder, a free end of said piston being connected to said pressure member, and a return spring having a number of initially coned disc springs and arranged in said rod chamber to urge said piston toward the closed end of said hydraulic cylinder, said initially coned disc springs having central holes through which said piston extends;

hydraulic controlling means connected to said head chamber by means of a single duct and having a control valve adapted to lead a pressurized fluid into said head chamber and to guide the pressurized fluid to be discharged from said head chamber; and

detecting means for detecting values of predetermined factors of the body to be supported and supplying predetermined signals to said control valve in accordance with the detected values so as to control the operating pressure of said control valve.

4,452,436

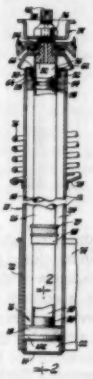
SINGLE TUBE STRUT SHOCK ABSORBER

Loren R. Gute, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1981, Ser. No. 288,524

Int. Cl.³ F16F *9/348*

U.S. Cl. 267—64.15 **5 Claims**



1. A telescopic hydraulic shock absorber comprising a cylinder tube having a hydraulic fluid therein, a primary piston mounted for reciprocating axial movement in said cylinder tube and cooperating with said cylinder tube for forming first and second chambers filled with hydraulic fluid, said primary piston having first variable orifice valve means therein hydraulically interconnecting and metering flow of fluid directly through said primary piston between said first and second chambers only as the primary piston axially moves in a rebound stroke in said tube, a tubular piston rod operatively secured to said primary piston and axially extending in said cylinder tube and outwardly from one end thereof, a floating piston mounted in said tubular piston rod for forming variable volume third and fourth fluid chambers, said third chamber providing a hydraulic fluid reservoir, second variable orifice valve means in said primary piston operatively in parallel with

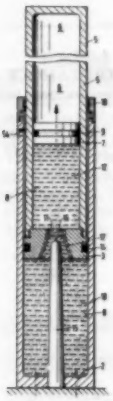
said first valve means hydraulically interconnecting and metering flow directly through said primary piston from said first fluid chamber to said third fluid chamber in said piston rod only when the primary piston moves axially in said cylinder tube in a compression stroke, a compressible gas operatively disposed within said fourth chamber to provide a spring active on said floating piston therein with sufficient pressure to keep the hydraulic fluid in said third chamber in intimate contact with said second valve means during all axial movements of said primary piston to reduce shock absorber lag and thereby improve damping performance of said shock absorber.

4,452,437

HYDRAULIC-OPERATING SHOCK AND VIBRATION ABSORBER AND DAMPER

Kaspar Lochner, Karlsburgerstr. 61, München, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,855
The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.
Int. Cl.³ F16F 9/342; C10M 5/02
U.S. Cl. 267—64.22 **20 Claims**



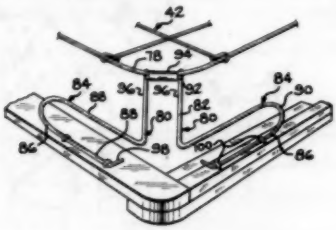
1. Hydraulically-operated shock and vibration damper which includes a cylinder closed at one end having an interior, a piston which is slideable within the cylinder, said piston being provided with a control port and connected with a hollow piston rod having an interior and extending out of the open of the cylinder, a chamber defined by said interior of said cylinder, and the interior of the hollow piston rod filled with an incompressible damping fluid, and a slideable separating piston in said hollow piston rod defining a space separate from said chamber in which there is a compressible agent, the damping fluid being pressable out of one portion of the chamber, via the control port, another portion of the chamber bounded by the separating piston and compressing the space there behind when the shock absorber is under load, characterized in that the control port consists of a simple jet orifice formed by a through axial opening (**11**) in the piston (**3**) and a control pin (**15**) of varying diameter which extends into the opening of the piston, and in that the damping fluid is non-Newtonian, permanently plastic, homogeneous paste (**8**) of graphite, 0.1 to 8 wt. % wetting agent, 0.1 to 10 wt. % structural viscosity agent and 40 to 70 wt. % of a fluid selected from the group consisting of polyglycol ether, polyglycol ester, a saturated aromatic ester of carboxylic acid, and a saturated aliphatic ester of carboxylic acid, relative to the total weight of the paste (**8**).

4,452,438

BOX SPRING ASSEMBLY WITH IMPROVED CORNER SPRINGS

William L. Hancock, Lexington, and Wilbur C. Bewley, Jr., Georgetown, both of Ky., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Jan. 29, 1982, Ser. No. 344,112
Int. Cl.³ A47C 23/04
U.S. Cl. 267—103 **3 Claims**



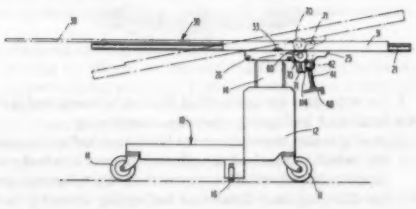
1. In a box spring assembly which includes a generally horizontal rectangular frame and a generally horizontal spring wire mattress support deck disposed above and substantially parallel to said frame, said deck including a plurality of substantially straight wires arranged criss-cross fashion, some of said wires extending lengthwise of said frame and others of said wires extending crosswise of said frame and a border wire arranged in a generally rectangular shape in a supporting relation with said straight wires and having corner portions, and a plurality of limited deflection support springs arranged between said deck and said frame so as to yieldably support said deck on said frame; the improvement comprising corner springs mounted on said frame in positions yieldably supporting the corners of said deck, at least one of said corner springs comprising a wire body having a pair of substantially mutually perpendicular leg portions, each leg portion comprising a return bent upon itself wire section disposed in a generally vertical plane and secured to said frame, an attaching portion disposed in a side-by-side relation with a corner portion of said deck, clip means securing said side-by-side portions together, and upright load transmitting columns extending downwardly from the ends of said attaching portion and joined to said leg portions so as to yieldably collapse said return bent wire sections in response to downwardly directed loading of said columns.

4,452,439

SAFETY LATCHES FOR TILTABLE EMERGENCY X-RAY EXAMINATION TABLE

William F. Hogan, Woodbury, N.J., assignor to Spectrum X-Ray Corporation, Westville, N.J.

Filed Apr. 19, 1982, Ser. No. 369,354
Int. Cl.³ G03B 41/16
U.S. Cl. 269—323 **9 Claims**



1. In an X-ray examination table having a table top which is

slidable on a non-slidable top, both of which are tiltable about the transverse axis of the table, said slidable top having side flanges, the improvement which comprises the provision of means for latching the slidable table top against unwanted sliding movement when the table tops are tilted, said latching means comprising:

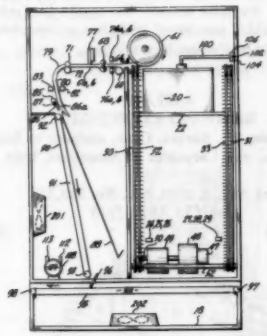
a. a generally circular truncated disc having a flat;
b. means mounting said disc in such position that its flat is immediately adjacent and below the undersurface of a side flange of said slidable table top;
c. a recess in said side flange;
d. means for moving said disc rotationally to cause a segment of said disc to enter into said recess; and
e. first locking means for locking said disc in the last-named position;

4,452,440

PAPER FEEDING APPARATUS AND CART

Edmund I. Fagan, Bellevue; Richard P. Guthrie, and Robert G. Railton, both of Kirkland, all of Wash., assignors to EMF Corporation, Redmond, Wash.

Filed Aug. 28, 1981, Ser. No. 297,424
Int. Cl.³ B65H *5/22*
U.S. Cl. 271—3.1 **7 Claims**



1. A paper feeder for feeding single sheets of paper from a stack of paper located on a tray, to other paper handling equipment, comprising:

a tray for holding a stack of paper sheets;

a paper feeder frame;

a paper stack elevator means for supporting and vertically positioning said tray and said stack so that the top sheet of said stack is at a proper feed elevation; said stack elevator means being capable of receiving trays or paper sheets from the side thereof;

said stack elevator means including a first pair of moveable and opposed tray supporting means for engaging, supporting and vertically positioning said tray; said first pair of tray supporting means being separated a distance equal of a first gage;

said stack elevator means also including a second pair of movable and opposed tray supporting means for engaging, supporting and vertically positioning said tray; said second pair of tray supporting means being separated a distance equal to a second gage smaller than said first gage; whereby said tray can be easily inserted into said elevator means from the side and said tray will engage only one run of each of said tray supporting means; and

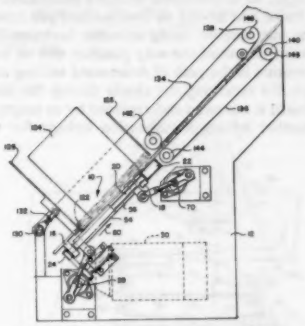
a paper feed train means for taking paper sheets from the top of said stack, conveying them along a paper path, and delivering them to other paper handling equipment.

4,452,441

NEWSPAPER STREAM FORMING DEVICE

Harold D. Poag, Naperville, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 17, 1981, Ser. No. 303,319
Int. Cl.³ B65H *3/08, 3/40*
U.S. Cl. 271—93 **4 Claims**



1. An apparatus for successively withdrawing single newspapers or the like from the bottom of a stack and presenting them in an overlapped stream to a conveyor for further processing, said apparatus comprising:

(a) a plurality of gripping members, each said gripper member including:
  (i) a body defining an interior chamber; and
  (ii) a foraminous wall whereby the interior chamber communicates to the exterior;
(b) valve means mounting said gripper members into separate first and second groups for opposing linear reciprocation between inner and outer end positions;
(c) gripper drive means connected to each of said first and second groups to effect said reciprocation;
(d) a source of vacuum;
(e) means connecting said source of vacuum to the interior of each of said gripper members;
(f) valve drive means connected to said gripper drive means in timed relationship with respect thereto so that vacuum is present in said gripper members only during removal of the bottom newspaper from the stack; and
(g) individual suction means operatively connected to said valve drive means and mounted to contact opposite corners of the lower most newspaper of the stack located adjacent the outer position of said gripper to draw the corners downwardly as said grippers start toward the inner position.

4,452,442

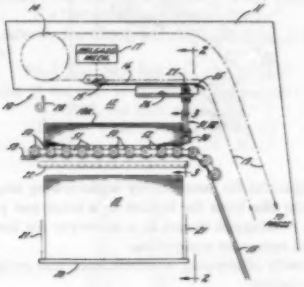
DEVICE FOR REGISTERING THE REAR EDGES OF THE SHEETS IN SHEET DELIVERY MECHANISMS FOR PRINTING MACHINES

Herbert Geschwindner, Wachtersbach, and Paul Abendroth, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland, Fed. Rep. of Germany

Filed Mar. 26, 1982, Ser. No. 362,057
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112672
Int. Cl.³ B65H *29/04*
U.S. Cl. 271—204 **8 Claims**

1. In a delivery mechanism for a sheet fed printing press the combination comprising a main frame, a delivery station within said frame, a chain type conveyor having grippers for engaging the leading edges of successive sheets for transporting the sheets into the delivery station, means at the delivery station for releasing the sheets so that they settle downwardly one by one, a main pile board for normally receiving the sheets, means

for supporting the main pile board in an upraised position and for progressively lowering the board as the sheets accumulate thereon, a rear edge guide in the form of a traverse member for positioning the rear edges of the downwardly settling sheets, a brake assembly at the delivery station for engaging the trailing edges of the sheets for decelerating the sheets, the brake assembly being horizontally adjustable to accommodate sheets of different length, an intermediate stacking mechanism having a horizontal frame and having an intermediate pile receiver, the intermediate pile receiver being movable horizontally on the frame between an out-of-the-way position and an interposed receiving position in the path of downward settling movement of the sheets for receiving the sheets during the time that a filled pile board is removed and replaced by an empty one, the traverse member having a suspension linkage for vertically



suspending the same from the brake assembly for horizontal adjusting movement in unison therewith, means for locking the ends of the traverse member to the frame of the intermediate stacking mechanism for positively holding the traverse member in its horizontally adjusted position, the frame of the intermediate stacking mechanism being vertically adjustable with respect to the main frame, the suspension linkage being vertically extensible so that the traverse member may follow the vertical movement of the frame of the intermediate stacking mechanism enabling the traverse member to serve as a positively positioned rear edge guide for both (a) the sheets which are deposited to form an intermediate pile and (b) the sheets which are subsequently deposited thereon to form a main pile with the result that all of the sheets in the main pile are in precise register.

4,452,443

APPARATUS FOR DISTRIBUTING CONTINUOUSLY SUPPLIED TUBE SECTIONS TO THREE PRODUCTION LINES FOR MAKING SACKS

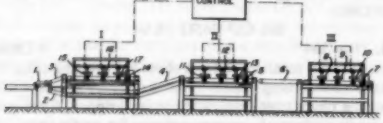
Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 062,430, Jul. 31, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,586

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 28341062

Int. Cl.³ B31B *1/08*; **B65H** *5/18, 29/40*; **B65G** *29/00*

U.S. Cl. 271—279 **2 Claims**



1. Apparatus for uniformly distributing tube sections continuously supplied in a longitudinal direction to a plurality of transversely arranged main conveying lines which lead to processing stations, preferably to sewing lines for applying base stitching to the tube sections, comprising: a connecting conveyor leading to a first main conveying line, an intermediate conveyor leading to a second of the main conveying lines, a deflector for selectively feeding tube sections to said connecting and said intermediate conveyors to thereby control distribution of the tube sections between said connecting and said intermediate conveyors, said connecting and intermediate conveyors extending transversely to said first main conveying line to define a first intersection, there being at least three intersections of which the second and third are so connected by transporting conveyors to the intermediate conveyor to extend the conveying path from the first main conveyor up to the last intersection, said main conveying lines including processing stations and extending from the intersections, said intersections including a plurality of turntables having at least two discs rotatable about spaced vertical axes and disposed substantially in the conveying plane, pressure tips lowerable towards the discs to releasably engage a tube section between the tips and the discs, means for rotatably supporting the pressure tips, said discs being rotatable to feed the tube sections transversely to inlet gaps of the main conveying lines, and control means for controlling the deflector and turntables so that the first tube section of a series of tube sections is fed to the last intersection and then other tube sections of the series are successively fed to the other intersections, with the first intersection being the last intersection fed, the conveying path being such that the tube section fed to the last intersection passes the turntables associated with the section intersection during its passage to the last intersection.

4,452,444

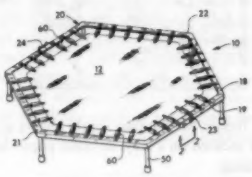
REBOUND EXERCISER

Everett E. Schulze, Jr., Aurora, Colo., assignor to Imagination Properties, Inc. and Carpenter & Associates, both of Lakewood, Colo.

Filed Aug. 3, 1981, Ser. No. 289,322

Int. Cl.³ A63B *5/18*

U.S. Cl. 272—65 **40 Claims**



1. A rebound exerciser kit having component parts capable of being assembled at a given site so as to provide a rebound exerciser for use by an individual, the exerciser kit comprising:

a frame means formed of two substantially symmetrical sections disposed opposite one another, each frame section having two end portions to provide two pairs of opposed end portions;

a mat of flexible, resilient webbing;

a plurality of coil springs, each of said plurality of coil springs having one end thereof releasably secured to said mat and the other end thereof releasably secured to said frame means;

hinge and locking means for pivotally securing said symmetrical sections together and for releasably locking said sections during use of said exerciser, said hinge and locking means permitting said sections to be pivoted to a first compact position wherein said sections are spaced apart and superimposed to facilitate transportation and storage of said kit, said hinge and locking means further permitting said sections to be pivoted to a second extended position wherein said sections are in substantially the same

plane to permit an individual to perform exercises on said mat, said hinge and locking means including two diametrically opposed hinge and locking assemblies, each said hinge and locking assembly including at least one plate means extending along each of said pairs of opposed end portions, a pivot member extending through each said plate means and each of said opposed end portions to provide two pairs of spaced pivot members, and a locking member extending through each plate means and each end portion between each of said pairs of spaced pivot members; and

means for supporting said frame means in a position spaced above a surface onto which said rebound exerciser is placed, said supporting means adapted to be releasably secured to said frame means by manual manipulation when said sections are in said second extended position and adapted to be removed from said frame means by manual manipulation when said sections are in said first compact position.

4,452,445

LOADING DEVICE FOR PHYSIOLOGICAL EXAMINATIONS

József Csekes, Debrecen, Hungary, assignor to Medicor Muvek, Budapest, Hungary

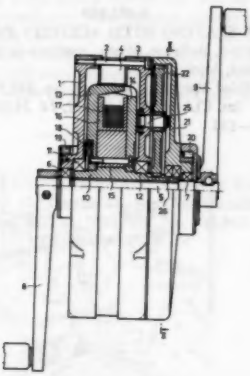
PCT No. PCT/HU81/00034, 371 Date Apr. 12, 1982, 102(e) Date Apr. 12, 1982, PCT Pub. No. WO82/00769, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 28, 1981, Ser. No. 371,301

Claims priority, application Hungary, Aug. 29, 1980, 2131/80

Int. Cl.³ A63B *21/24;* H02K *7/10*

U.S. Cl. 272—73 **3 Claims**



1. Physiological loading device having a drive shaft to be driven by a person to be examined, a freewheel, a transmission gear, a fly wheel mass coupled to a dynamo-electric machine in brake operation with external control and loading circuits, characterized in that the drive shaft (5) is coupled via a freewheel (20) to a drum wheel (21) with internal teeth, the interior space of the wheel containing several follower pinions (22,23,24) equally distributed over a circle, and of equal size and number of teeth, said pinions are disposed for driving a toothed inner shaft (10) which is arranged about the drive shaft (5); the rotor of the dynamo-electric machine being connected to the inner shaft (10) and simultaneously functioning as a flywheel mass (15) the stator housing of the dynamo-electric machine being located adjacent the drum wheel (21) and supporting on its outside the shafts of said follower pinions and supporting on its inside a laminated armature (4) disposed around the rotor and carrying a polyphase winding which is connected to loading circuits or is provided with further rotor windings which are connected to external control circuits via collector rings (18).

4,452,446

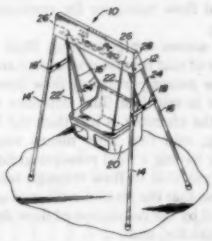
BATTERY-OPERATED CHILD'S SWING

David Saint, Elverson, Pa., assignor to Graco Metal Products, Inc., Elverson, Pa.

Filed Sep. 30, 1982, Ser. No. 429,747

Int. Cl.³ A63G *9/16*

U.S. Cl. 272—86 **12 Claims**



1. In a child's swing or the like which includes a supporting frame and a horizontal pendulum axle journaled in the frame and from which a seat is suspended, the combination comprising:

(a) a motor mounted on the horizontal pendulum axle for movement therewith,

(b) crank means mounted on the horizontal pendulum axle for movement therewith, the crank means being driven for rotation with respect to the pendulum axle by the motor,

(c) torsional spring means fixedly mounted with respect to the frame, the spring means being in spaced relation to the axis of the horizontal pendulum axle and substantially parallel to the axis, and

(d) sliding coupling means for coupling the crank means to the torsional spring means, whereby rotation of the crank means imparts a force to the torsional spring means through the coupling means resulting in a force moment about the axis of the horizontal pendulum axle, causing the axle to rotate about its axis, thereby causing the seat to swing.

4,452,447

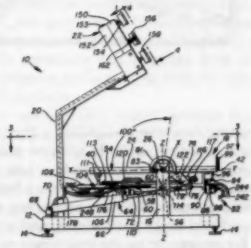
ANKLE EXERCISER

Chelsea Lepley, Denton, and J. Scott LaCroix, Irving, both of Tex., assignors to Isotechnologies, Inc., Carrboro, N.C.

Continuation-in-part of Ser. No. 172,184, Jul. 7, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 242,888

Int. Cl.³ A63B *23/04*

U.S. Cl. 272—96 **22 Claims**



1. An apparatus for exercising the ankle of a user comprising:

a frame;

a pedal assembly pivotally mounted to said frame for motion about at least a first axis, said pedal assembly including strap means for securing a foot of the user thereon, the axis of pivotal motion of said pedal assembly substantially corresponding to the axis of motion of the ankle joint in dorsal and plantar flexion;

a first double acting fluid structure having first and second fluid chambers therein interconnected between said frame and said pedal assembly for resisting the pivotal motion of said pedal assembly about said first axis;

a fluid reservoir;

a first fluid flow restrictor for restricting fluid flow therethrough;

first flow means for permitting fluid flow between each chamber of said first fluid structure and said reservoir, said first flow means permitting flow from said reservoir to a chamber in said first fluid structure when the fluid pressure in the chamber is less than the fluid pressure is said reservoir, said first flow means requiring fluid from a chamber having a fluid pressure greater than the pressure in said reservoir to flow through said first fluid flow restrictor so that the pivotal motion of said pedal assembly is restricted by the restriction of flow through said first fluid flow restrictor; and

a second fluid flow restrictor for restricting fluid flow therethrough, said first flow means requiring fluid from said first chamber of said first fluid structure to flow through said first flow restrictor and fluid from said second chamber to flow through said second fluid flow restrictor permitting the resistance to motion of said pedal assembly in opposite directions about said first axis to be dissimilar, the restriction to flow through said first and second fluid flow restrictors permitting the selection of the resistance to motion in either direction independently of the opposite direction so that the force necessary to pivot said pedal assembly by dorsal and plantar flexion of the ankle joint of the user can be independently controlled, said pedal assembly including strap means for securing both feet of the user thereon in a generally aligned manner to exercise both ankles of the user.

4,452,448

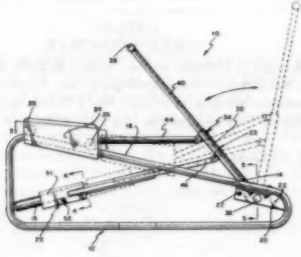
EXERCISING MACHINE

Harry S. Ausherman, 715 Fairway, Wichita, Kans. 67212

Filed Mar. 5, 1982, Ser. No. 354,942

Int. Cl.³ A63B *69/06*

U.S. Cl. 272—131 **2 Claims**



1. An exercising machine comprising a frame having a pair of side members situated parallelly with respect to each other and whose tops provide a pair of rails; a seat means slidably resting upon said rails of the side members; a brake shaft means attached to said frame; a friction producing means slidably engaging around said brake shaft means; and a means attached to said frame for reciprocating the seat means on the rails of the side members while simultaneously reciprocating the friction producing means along the brake shaft means when physically operated by the user of the exercising machine, said exercising machine additionally comprising a seat moving bar interconnecting the seat means with the means for simultaneously reciprocating the seat means and the friction producing means along the brake shaft means; said exercising machine additionally comprising a pair of bracket members attached to said pair of side members and opposed with respect to each other, said pair of opposed bracket members each including a structure defining a plurality of bracket apertures, said opposed bracket apertures of opposed bracket members being in registry; said means for simultaneously reciprocating the seat means and the friction producing means pivotally lodges within a pair of opposed registered bracket apertures of said pair of bracket members; said means for simultaneously reciprocating includes a structure which partially defines a conduit with at least one conduit aperture; said exercising machine additionally comprising a handlebar including a rod integrally bound thereto and which is telescopically disposed within said conduit, said rod having a plurality of rod apertures which can be telescopically aligned with the conduit aperture in order to adjust the height of said handlebar with respect to the conduit; said exercising machine additionally comprises a cross brace member interconnecting said pair of side members of said frame, said brake shaft means has an end bound to the cross brace member and protrudes aslantly therefrom; said friction producing means comprises a wooden block means including an opening through which said brake shaft means extends in order for the wooden block means to reciprocally traverse the brake shaft means simultaneously to and in the same direction to the seat means being reciprocated; said exercising machine additionally comprising a tension adjusting means engaging the wooden block means for adjusting frictional tension of the wooden block means against the brake shaft means.

4,452,449

OFFICE SEATING WITH ACTIVITY FEATURES

Robert L. Propst, Bellevue, Wash., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Mar. 22, 1982, Ser. No. 360,529

Int. Cl.³ A63B *21/02, 21/14, 23/04*

U.S. Cl. 272—134 **10 Claims**

1. In a work station wherein an individual occupies a seated position while working, the improvement which comprises a seating arrangement for the individual which concurrently provides both for stability of certain portions of the individual's body in conducting work tasks at the work station and for mobility of certain other portions of the individual's body to engage in therapeutic activities while conducting work tasks, said seating arrangement comprising a seat mounted on an upright by a mechanism which allows fore and aft motion of the seat relative to the upright thereby providing for mobility by fore and aft rocking of the seat so that the individual, by leg action, can generate rocking motion while maintaining his or her head stabilized for conducting work tasks, said mechanism comprising one or more rollers operatively engaged with a track providing a fore and aft motion by rolling engagement of the rollers with the track, a yieldable resistance which is effec-

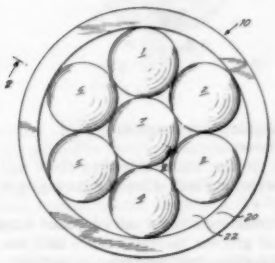
tive to yieldably resist with increasing force increasing fore and aft displacement of the seat from a neutral position, and adjustment means for said resistance effective to enable the individual to set the magnitude of the resistive forces which are encountered during fore and aft displacement of the seat on the upright.

4,452,450

SEVEN BALLS AND BILLIARD RACK THEREFOR

William D. Cayton, 25 Myrtle Blvd., Larchmont, N.Y. 10538

Filed Jul. 13, 1981, Ser. No. 282,792
Int. Cl.³ A63D 15/00
U.S. Cl. 273—22 11 Claims



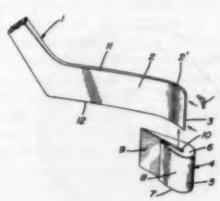
1. The combination of a pocket billiard rack configured to facilitate the circular arrangement of seven billiard balls on a billiard table, and seven billiard balls, comprising a framing member having a top end, a bottom end and an opening extending between said ends, said framing member being dimensioned for closely receiving said balls in a circular arrangement, said member being so dimensioned such that it would constrain six of said balls to surround and abut the seventh of said balls when each of the balls and rack are resting on the billiard table.

4,452,451

HOCKEY STICK BLADE SAFETY PAD

J. Réal Dubreuil, 139 Cartier St., Sept-Iles, Canada G4R 2T1

Filed Sep. 13, 1982, Ser. No. 416,943
Int. Cl.³ A63B 59/14
U.S. Cl. 273—67 A 4 Claims



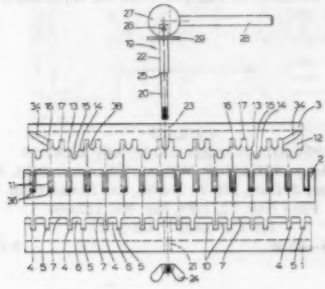
1. The combination of a hockey stick and a safety pad, said stick including an elongated blade having opposite main faces, a front toe edge substantially normal to the longitudinal axis of said blade and upper and lower edges, said upper and lower edges defining between themselves, a width of said blade, said pad being made of semi-rigid, semi-resilient material, having a front body portion and a pair of rearwardly extending wings separated by a longitudinal slot, said pad having a flat upper end surface and a flat lower end surface, said slot receiving the front toe edge and the front portion of said blade, said pad being adhered to said front portion of said blade and having a length equal to the width of said blade with said flat upper and lower end surfaces flush with the upper and lower edges respectively of said blade, the front toe edge of said blade being entirely covered by said pad.

4,452,452

APPARATUS FOR STRINGING A RACKET FRAME

Frans F. Timmer, Callantsoog, Netherlands, assignor to Intervention, Ltd., Channel Islands

Filed Nov. 26, 1982, Ser. No. 444,853
Claims priority, application Netherlands, Dec. 10, 1981, 8105557
Int. Cl.³ A63B 51/14
U.S. Cl. 273—73 A 15 Claims



1. An apparatus for lacing the lateral strings in a racket frame which has already been strung with the longitudinal strings thereof, comprising:

a horizontally extending lower first beam,

said lower first beam having in its upper surface, a first longitudinal row of spaced vertical slots, the spacing between said slots at least approximately corresponding to twice the average pitch distance between said longitudinal strings of said racket frame, and a second longitudinal row of vertical slots in said first beam upper surface similar to said first row and staggered with respect to said first row, the slots of the first row and adjacent corresponding slots of the second row together forming a plurality of pairs of slots, the spacing between the slots of each pair being smaller than the average pitch distance between said longitudinal strings, and the upper surface of said lower first beam forming a plurality of string support surfaces between said plurality of pairs of slots,

an upper second gripper beam extending parallel to and above said lower first beam and vertically movable with respect thereto between an open and a closed position of said apparatus, said second gripper beam comprising gripping means formed on the lower side thereof and in said closed position extending downwardly alongside of said lower beam, said gripping means including a plurality of longitudinally arranged downwardly facing string gripping surfaces each associated with one of said slots of said lower beam, said gripping surfaces being arranged in pairs corresponding to said pairs of slots, and a plurality of downwardly extending lug portions each arranged between the gripping surfaces of at least the majority of the pairs of said surfaces,

and means for moving said second gripper beam with respect to said lower first beam between said two positions,

said apparatus being adapted to be mounted crosswise on said longitudinal strings of said racket frame with said lower first beam extending below and said upper second gripper beam extending above said strings,

whereby in one lateral position of said assembled beams with respect to said longitudinal strings on closing the apparatus, a first group of alternate longitudinal strings are pushed into the slots of said first row of slots by the grip-

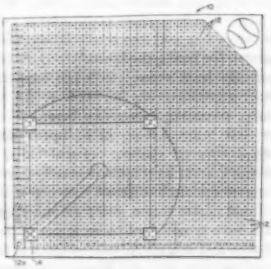
ping surfaces associated with said first row of slots; whereas, the remaining longitudinal strings forming a second group of strings intermediate of said first group find support on said support surfaces of said lower first beam so as to form a channel between said first and second group of strings allowing a lateral string to be passed therethrough and whereby after lacing in and tensioning said lateral string and again opening the apparatus, the latter can be shifted in the longitudinal and lateral directions on said longitudinal strings so as to position said second group of strings between the slots and associated gripping surfaces of said second row of slots allowing the location of said channel between said two groups of longitudinal strings to be changed when the apparatus is again closed.

4,452,453

BASEBALL BOARD GAME APPARATUS

James A. Daley, 121-1/2 N. Wabash, Glendora, Calif. 91740, and Gregory J. Dore, 205 W. 3rd St., San Dimas, Calif. 91773

Filed Nov. 12, 1981, Ser. No. 320,664
Int. Cl.³ A63F 7/00, 3/00
U.S. Cl. 273—93 R **9 Claims**



1. Game board apparatus for symbolically representing the play of a baseball game for two players which each have a team and which comprises:

a board on which is disposed rectangular coordinates and indicia identifying rows and columns and a baseball field superimposed thereon, said baseball field thereon constituting a continuous course of play;

a plurality of team member symbols representing members of each player's team, each team member symbol being dimensioned for placement at a plurality of positions on said board;

a ball symbol dimensioned for placement at a plurality of positions on said board defined by the intersection of said rows and columns;

first means for determining one of three events, said first means having indicia of strike, ball, and hit thereon;

second means for determining one of three events after a hit indicia has appeared on said first means, said second means having, fly, grounder, and bunt indicia thereon;

third means for randomly, with center weighting, determining on which of said columns said ball symbol is to be placed after a fly indicia has appeared on said second means; and

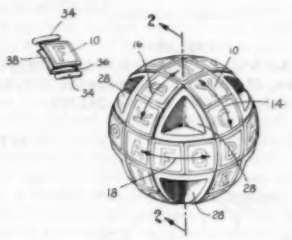
fourth means for randomly, with center weighting, determining on which of said rows said ball symbol is to be placed after a fly indicia has appeared on said second means.

4,452,454

MANIPULATABLE GAME

Wilton R. Greene, 426 Hayne St., Woodruff, S.C. 29388

Filed Jul. 30, 1982, Ser. No. 404,348
Int. Cl.³ A63F 9/08
U.S. Cl. 273—153 S **7 Claims**



6. A manipulatable game comprising:

a support member;

a plurality of circular tracks extending about said support member intersecting each other at right angles at junction points;

each circular track including a pair of spaced flanges defining spherical grooves therebetween which run in three different directions about said support member;

a plurality of movable members having four sides of equal length;

grooves provided in each side of said movable members for receiving said flanges of said circular tracks so that said movable members can be shifted along said tracks and shifted from one track to another at said junction of said tracks, and

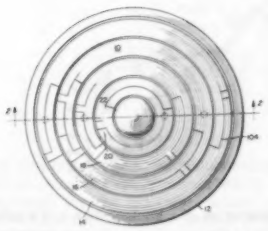
elongated bearings carried in two of said grooves in the sides of said movable members for coupling adjacent movable members carried on a track together.

4,452,455

PUZZLE GAME

Jon Bergstrom, and Jerice Bergstrom, both of P.O. Box 378, Norwich, Vt. 05055

Filed Sep. 27, 1982, Ser. No. 423,775
Int. Cl.³ A63F 9/08
U.S. Cl. 273—155 **10 Claims**



10. A puzzle game apparatus comprising:

a base;

a platform on the base;

a upwardly projecting flange on the base spaced from the platform;

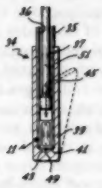
a plurality of concentric rings on the base between the platform and the flange, said rings individually rotatable;

braking means for randomly stopping the rings; and

line indicia on each ring creating a maze across the rings in their stopped positions whereby a player attempts to nego-

tiate the maze with a playing piece within a given period of time.

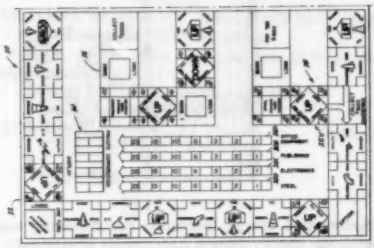
4,452,456
ARTICLE WEIGHTING METHOD
Rudolph J. Kochevar, 252 Arbolada Dr., Arcadia, Calif. 91006
Filed Sep. 7, 1982, Ser. No. 415,747
Int. Cl.³ A63B *53/02*
U.S. Cl. 273—169 **9 Claims**

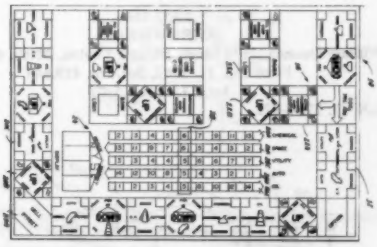


1. A method of weighting an article comprising:
providing a member having an internal wall defining a cavity;
providing a weight capsule including a rupturable wall defining a sealed interior chamber and a liquid within said chamber selected from the group consisting of adhesives and solvents;
placing the weight capsule in the cavity; and
rupturing said wall to free said liquid so that said liquid can come into intimate contact with the internal wall of the member.

4,452,457
FINANCIAL BOARD GAME
Sabah Atieh, and Jennifer M. Atieh, both of 301 Woodfield Rd., West Hempstead, N.Y. 11552
Filed Nov. 12, 1981, Ser. No. 320,176
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **9 Claims**

1. A financial board game for providing enjoyment to the players in addition to serving as a financial teaching aid, comprising:
a board having a closed loop path divided into a plurality of discrete spaces interconnected to one another, each space providing an instruction for a player whose token lands thereon during movement along the path,
a stock market pricing display including a plurality of stocks having a plurality of indicia indicating different stock values, certain of said spaces of said closed loop path having instructions thereon indicating that a particular stock has gone up or down being designated a first group, marker means movable to correlate with instructions from said first group of spaces for collectively changing the indicia for all the stocks to correlate with an instruction from one of said spaces of said first group indicating a change in value of a particular stock;
said indicia for the stocks of said stock market pricing display are selected so that the stocks of said stock market pricing display increase or decrease in a coordinated manner with at least two of the stocks rising in price while at least two other stocks are falling in price, said indicia being further arranged to form a plurality of columns, said marker means being movable to correlate with instructions from said spaces of said first group of spaces to frame a particular column and thereby indicate the current market value for all of the stocks;
an inner path interconnecting said closed loop path, said inner path being divided into a plurality of discrete spaces interconnected to one another, each such discrete space providing an instruction for a player whose token lands thereon, the first space of said inner path being contiguous with one of said spaces of said closed loop path to provide entry onto said inner path from said closed loop path and the last space of said inner path being contiguous with another of said spaces of said closed loop path to provide exit from said inner path onto said closed loop path; and other spaces of said closed loop path being designated a



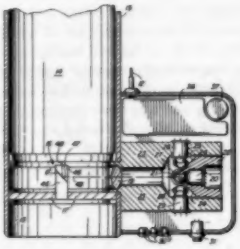


second group, said other spaces enabling a player to gain control of a stock when a player's token has landed thereon a sufficient number of times by purchasing a predetermined number of shares of the stock whereby the value of the controlled stock indicated on said stock market pricing display is multiplied.

4,452,458
DEVICE TO DETERMINE, INDICATE AND RECORD AIM OF OBJECT
Karl O. Timander, Timmersdala, and Ulf O. Johansson, Bromma, both of Sweden, assignors to C. Carl Timander, Rochester, Minn., a part interest
Filed Jun. 4, 1982, Ser. No. 385,168
Claims priority, application Sweden, Sep. 18, 1981, 8105536
Int. Cl.³ F41F *27/00*
U.S. Cl. 273—310 **20 Claims**

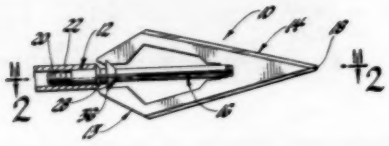
1. For use in a system for training personnel in aiming and firing weapons, said system comprising a weapon; a telescopic sight affixed to said weapon in aiming alignment therewith; and a target, free of wire and radio connections and disposed in spaced independent relationship to said weapon and visible through said sight, said target having means associated there-

with at a defined point thereupon for emitting electromagnetic energy at or close to a visible frequency therefrom for reception by said sight; a device mounted to said weapon in cooperative coaction with said sight and comprising: a semi-transparent reflective surface disposed within said sight at an angle relative to the longitudinal axis of said sight for receiving



target-emitted energy thereupon and reflecting said energy therefrom; energy sensing components strategically disposed to ultimately receive said reflected energy from said surface and discriminate the relative positioning thereof; and means translating said discriminant diversion of energy into a visible pattern demonstrating whether the aim at the moment of firing is at the defined point and, if not, the deviation therefrom.

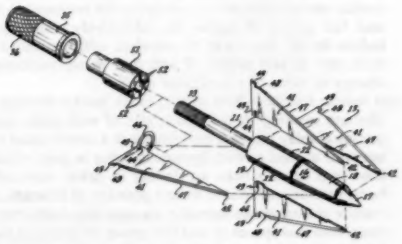
4,452,459
ARROWHEAD
William Doonan, 1978 Shady Shores, Lupton, Mich. 48635
Filed Sep. 17, 1982, Ser. No. 419,445
Int. Cl.³ F41B 5/02
U.S. Cl. 273—422 **7 Claims**



1. An arrowhead comprising, in combination, a blade assembly and an arrowhead shaft defined by an axis, said blade assembly being defined by front and rear ends, said arrowhead shaft including a rear end adapted for insertion in an end of a tubular arrow shaft, a front end adapted for supporting said front and rear ends of said blade assembly, connecting means connecting said front and rear arrowhead shaft ends, and a column support positioned rearward of said rear end of said blade assembly and extending radially outward from said connecting means substantially perpendicular to said axis proximate said arrowhead shaft rear end so as to abut a tubular arrow shaft end into which said arrow shaft rear end is inserted whereby axial forces in said arrowhead shaft are distributed through said column support across said arrow shaft end.

7. An arrowhead assembly having a front end for piercing a target and a rear end adapted for connection to a tubular arrow shaft end defined by a certain inside arrow shaft diameter and a certain outside arrow shaft diameter, comprising, in combination, an arrowhead shaft, a secondary blade and a primary blade; said arrowhead shaft being defined by a longitudinal axis and having a rear end cylindrical section having a certain diameter, said certain diameter being a diameter substantially equal to said arrow shaft inside diameter and adapted for insertion therein, an annular column support extending radially from said axis, said annular column support having a rear surface substantially at right angles to said axis and having a second certain diameter, said second certain diameter being substantially equal to said outside arrow shaft diameter and adapted to abut said tubular arrow shaft end, an axial slot in said front end of said arrowhead shaft for receiving said secondary blade, two grooves in said arrowhead shaft front end on opposite sides of said slot for receiving said primary blade, and an annular blade support in front of said annular column support for supporting and retaining said blades on said arrowhead shaft, said annular blade support including a rear surface extending radially and substantially at right angles to said axis, a conical front surface tapering forwardly toward said axis, and four index slots equispaced in the perimeter of said blade support, the first two of said index slots being axially aligned with said front end slot and the second two of said index slots being axially aligned with said axial slot; said secondary blade having a front end, two knife edges diverging rearwardly from said secondary blade front end, a rear edge opposite said front end for insertion in said axial slot, two support edges parallel to said axis for insertion in two of said index slots, two guide edges proximate said support edges and diverging rearwardly so as to guide said support edges into said index slots as said secondary blade is inserted in said front slot, said secondary blade front end being proximate said arrowhead shaft front end when said secondary blade rear edge is inserted in said axial front slot and said secondary blade support edges engage two of said index slots; said primary blade including two knife edges diverging rearwardly from the front of said primary blade, a rear edge proximate said secondary blade front end, first and second front support edges proximate said primary blade rear edge and each being adapted to engage one of said grooves and first and second rear support edges substantially parallel to said axis and each being adapted to engage one of said index slots, a guide edge proximate each of said rear support edges diverging rearwardly for guiding said rear support edges across said blade support conical surface into one of said index slots, and at least one tab between one of said guide edges and one of said rear support edges for engaging said blade support rear surface when said primary blade front support edges engage said grooves, said primary blade rear support edges engage two of said index slots and said primary blade rear edge is proximate said secondary blade front end, thereby holding both said primary blade and said secondary blade on said arrowhead shaft.

4,452,460
ARROWHEAD CONSTRUCTION
Claude L. Adams, 12114 Park St., Cerritos, Calif. 90701
Filed Nov. 22, 1982, Ser. No. 443,233
Int. Cl.³ F41B 5/02
U.S. Cl. 273—422 **1 Claim**



1. An arrowhead comprising:
a conical body symetrical about an axis and having a pointed forward end and first means formed at the rearward end capable of being attached to a shaft;
at least two rotatable blades mounted symetrically around said body and disposed to protrude radially outward;
second means for pivotably mounting said blades to said

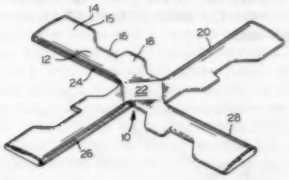
body so that said blades are capable of pivoting outwardly and rearwardly;
each of said blades are triangular in shape;
said body having at least two axially aligned slots symetrically disposed around said axis;
each of said blades having one side thereof disposed within one of said respective slots;
said second means comprising:
an axially aligned stud protruding from said body and having a diameter smaller than the diameter of said body to where said stud is attached;
each of said blades having an aperture formed relatively near the rearward angle of said blade which rearward angle is adjacent the said body;
a ring threaded through each of said apertures in said blades and said ring being disposed around said stud and adjacent said body;
a thimble disposed on said stud and against said ring; and
thread means for retaining said thimble to said stud.

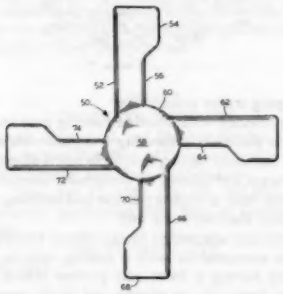
4,452,461

BOOMERANG

Mark J. O'Brien, Denver, Colo., assignor to Kona Associates Limited Partnership, New Haven, Conn.

Continuation of Ser. No. 186,231, Sep. 11, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,119
Int. Cl.³ A63B *65/08*
U.S. Cl. 273—426 **8 Claims**





1. A boomerang having a hub portion and a plurality of substantially diametrically opposed pairs of elongated blade portions extending outwardly from said hub portion and lying in a common plane, each of said blade portions generally providing an airfoil configuration in cross section, said blade portions having the leading edges thereof in substantial alignment in the diametrically opposed pairs; each of said blade portions including a fin portion adjacent the outer end thereof whose trailing edge extends farther in the rearward direction than does the trailing edge of the major portion of the remainder of said blade portion.

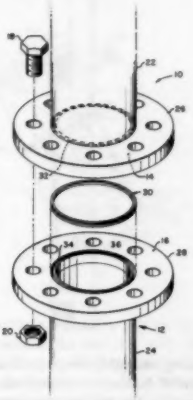
7. A boomerang having a hub portion and a plurality of substantially diametrically opposed pairs of elongated blade portions extending outwardly from said hub portion and lying in a common plane, each of said blade portions generally providing an airfoil configuration in cross section, said blade portions having trailing edge elements adjacent said hub portion in substantial alignment in the diametrically opposed pairs, each of said blade portions including a fin portion adjacent the outer end thereof whose trailing edge extends farther in the rearward direction than does said trailing edge element thereof adjacent said hub.

4,452,462

TEMPERATURE RESISTANT JOINT PACKING WITH E-SHAPED SPRING SEAL

Michael A. Karr, Jr., Houston, Tex., assignor to Gray Tool Company, Houston, Tex.

Filed Oct. 6, 1983, Ser. No. 539,595
Int. Cl.³ F16J *15/08*
U.S. Cl. 277—105 **10 Claims**



1. A system for establishing a temperature resistant pressure seal between two flat-faced surfaces, comprising:
a first groove in the first flat-faced surface disposed along a desired closed sealing line, said groove in cross section having two side surfaces and a bottom surface, the separation of the side surfaces decreasing with increasing depth below the first flat-faced surface;
a second groove in the second flat-faced surface, symmetrical in shape with the first groove about the plane of the corresponding flat-faced surface and also disposed along the desired sealing line;
a spring member of resilient metal for placement within the first and second grooves for formation of the desired seal, the spring member having an approximately E-shaped cross section facing the pressurized region, including a central web portion forming the central part of the E-shape and two outer arms, symmetric about and secured to the central web forming the two outer parts of the E-shape, each arm having a curved portion with an overall uncompressed horizontal dimension greater than the separation of the side walls of the first and second grooves at a depth intermediate the corresponding flat-faced surface and the groove bottom surface, and the overall dimension of the spring member cross section taken vertically across the E-shape being greater than the separation of the first and second groove bottom surfaces when the two flat-faced surfaces are placed in contact, for causing the curved portion of each arm of the spring member to contact and be progressively compressed between the side walls of the corresponding groove as the spring member is inserted progressively more deeply within the corresponding grooves and for causing vertical compression of

the entire spring member between the bottom surfaces of the first and second grooves when the flat-faced surfaces are in contact, thereby resulting in each arm of the spring member contacting the corresponding groove for forming the desired seal; and

means for urging and clamping the two flat-faced surfaces together, with the first and second grooves in a corresponding relationship.

4,452,463

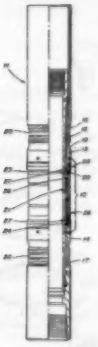
PACKER SEALING ASSEMBLY

Robert K. Buckner, Rowlett, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 25, 1981, Ser. No. 305,572

Int. Cl.³ E21B *33/02*; B65D *53/00*; F16L *21/02*

U.S. Cl. 277—120 **8 Claims**



2. In a sealing assembly for a packer having longitudinally spaced expander heads on a mandrel movable toward each other when setting the packer to squeeze against opposite end portions of an element disposed therebetween to cause the element to seal against the inside wall of a well casing, the improvement comprising, an annular receptacle surrounding said mandrel and located between each of the expander heads and said opposite end portions of said sealing element, said receptacles having inner and outer malleable annular walls with an end wall integrally connected therebetween so as to define annular troughs opening toward said sealing element, said inner wall normally being spaced radially outward from said mandrel, said opposite end portions of said sealing element protruding into said troughs for deforming said inner walls radially inward into sealing engagement with said mandrel against elastomeric extrusion between the mandrel and the expander heads when setting the packer.

4,452,464

OIL RING

Shoichi Furuhama, 6-3, Okusawa 5-chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,928

Claims priority, application Japan, Apr. 3, 1982, 57-47809[U]

Int. Cl.³ F16J *9/00*

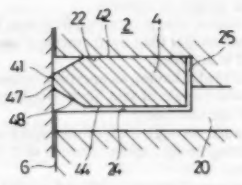
U.S. Cl. 277—216 **6 Claims**

1. In an oil ring assembly having a piston, an oil ring groove formed in the side periphery of said piston, an oil ring fitted in said oil ring groove, and a plurality of drain holes extending radially from said oil ring groove to the inside of said piston, said oil ring comprising a single cylinder contacting face formed on the side periphery thereof, said cylinder contacting face being arranged to undergo a cylinder contacting pressure of 2 to 6 Kg/cm², said oil ring and said cylinder contacting face being dimensioned to satisfy the following equations:

$$0.01 \leqq B/D \leqq 0.025 \quad (1)$$

$$T/B \leqq 4 \quad (2)$$

$$0.1 \leqq t/B \leqq 0.5 \quad (3)$$



where B is the axial height of said oil ring; D is the outer diameter of said oil ring; T is the radial thickness of said oil ring; and t is the width of the cylinder contacting face of said oil ring.

4,452,465

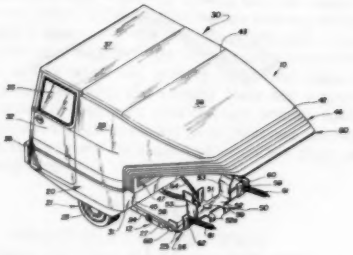
CAMPING TRAILER AND AUTOMOBILE-TRAILER COMBINATION

Robert E. Bourke, Westport, Conn., assignor to NBS, Inc., Lakeview, Ohio

Filed Jun. 4, 1981, Ser. No. 270,620

Int. Cl.³ B60D *5/00*; B62D *53/06*

U.S. Cl. 280—403 **50 Claims**



1. A camping trailer comprising

a chassis provided with wheeled running gear and including a tongue assembly projecting a distance forwardly, said tongue assembly having a vehicle hitch assembly carried at a forward end thereof for detachable interconnection of the trailer with a towing vehicle and enabling articulated movement therebetween, and

a body structure adapted to form a closed housing for occupants in combination with a towing vehicle, said body structure having a front end portion which projects a distance forwardly to overlie said hitch assembly and a portion of the rear of a towing vehicle, and sealing means carried by the front end portion forming a peripheral seal around said end portion to form a fluid-impervious seal with cooperative surface portions of a towing vehicle and permitting articulation of the trailer relative to a towing vehicle, said front end portion including front surface elements defining a transversely extending front wall surface having a portion which inclines upwardly and forwardly toward a top of said trailer body structure at an angle with respect to a horizontal plane that is substantially the same as the angle of a rear end surface of a towing vehicle with which the trailer is adapted to be coupled, said front wall surface formed with an opening providing access in a substantially horizontal plane to the

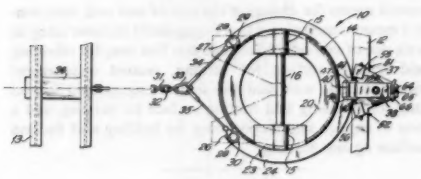
interior of the trailer and disposed within the confines of said peripheral seal, said opening being of a dimension and configuration to permit passage therethrough of an access door mounted on the rear end surface of a towing vehicle with which the trailer is adapted to be coupled and thereby permit integration of their respective interior spaces.

4,452,466

TRAILER CONTROL DEVICE FOR TRACTOR-TRAILER VEHICLES

William B. Herbert, R.D. #2, Box 448, Shawangunk, N.Y. 12566

Filed Nov. 22, 1982, Ser. No. 443,192
Int. Cl.³ B62D 53/06
U.S. Cl. 280—432 14 Claims



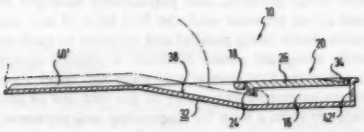
1. A trailer control apparatus for a tractor-trailer vehicle in which the trailer is swingably coupled to the tractor by a fifth wheel carried by the frame of the tractor and a kingpin carried by the trailer, said tractor-trailer vehicle having a fluid brake system including fluid lines and a brake pedal, said control apparatus comprising a support plate rigidly secured to the tractor frame, a control ring freely and rotatably carried by the support plate, control ring restraining means swingably coupled to the tractor frame, means to acutate the restraining means in response to the application of the tractor brake pedal to bring said restraining means into frictional contact with the control ring, a hitch connected at one end to control ring and at its other end to the trailer portion of the vehicle whereby lateral movement of the trailer will rotate the control ring upon the support plate, and spaced stop members on the tractor to activate the said restraining means when the brake pedal of the tractor is applied and the trailer reaches its maximum permitted angle of lateral movement.

4,452,467

CROSS COUNTRY SKI

Stephan Hetzelt, Brunnthal, and Oswald Pichler, Hohenbrunn-Riemerling, both of Fed. Rep. of Germany, assignors to TRAK Sportartikel GmbH, Fed. Rep. of Germany

Filed Jul. 13, 1982, Ser. No. 397,887
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3128009
Int. Cl.³ A63C 9/18
U.S. Cl. 280—615 18 Claims



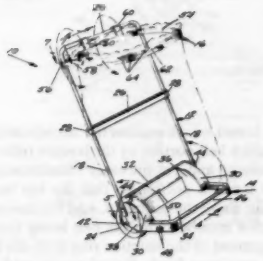
1. A cross-country ski which comprises:
(a) a ski body having a substantially planar top surface, the ski body characterized by a cavity portion therein;
(b) a binding for holding, in a positive and locking manner, an anterior, forwardly extending extension of the sole of a ski boot, the binding arranged in said cavity portion, so that the binding is at or below said planar top surface, the binding characterized by a recess formed to receive said extension of the sole, and which recess extends in the longitudinal direction of the ski; and
(c) a sole-extension latching means for releasably securing said extension of the sole within the said recess and which forms a cover for at least part of said recess.

4,452,468

CART WITH MOLDED BAG SUPPORTING STRUCTURES

Harold O. Eads, Parkersburg, W. Va.; Ronald R. Fowler, Coolville, Ohio, and Danny C. Adams, Parkersburg, WV, assignors to O. Ames Co., Parkersburg, W. Va.

Filed Sep. 8, 1982, Ser. No. 416,064
Int. Cl.³ B62B 1/04, 1/06, 1/26
U.S. Cl. 280—641 16 Claims



14. A cart for supporting a flexible plastic bag having an open mouth through which the interior may be filled with leaves or the like, said cart comprising an upright tubular frame structure defining a transversely extending manually engageable handle on the upper portion thereof, a pair of wheels, means mounting said wheels on the lower portion of said frame structure in transversely spaced relation for rotation about a transversely extending axis of rotation, a platform structure mounted with respect to said frame structure for movement between an extended bag bottom supporting position and a collapsed storage position and an open bag mouth supporting structure mounted on the upper end portion of said frame structure for movement between an extended open bag mouth supporting position and a collapsed storage position, the improvement which comprises

said platform structure including

a pair of wheel fender walls which extend over the forward and upper periphery of said wheels and rearwardly and downwardly over both sides of said wheels when said platform structure is disposed in said bag supporting position,

a rear wall extending in an upright position transversely between said fender walls when said platform structure is disposed in said bag supporting position and

a platform wall extending forwardly from the lower portion of said fender walls and said rear wall when said platform structure is disposed in said bag supporting position.

4,452,469

SEAT BELT JUNCTION RING

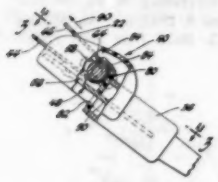
Lloyd W. Rogers, Jr., Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 16, 1982, Ser. No. 348,915
Int. Cl.³ B60R 21/00
U.S. Cl. 280—801 3 Claims

1. A junction ring adapted for use in a seat belt system wherein a continuous loop belt is slidable through the junction ring to define shoulder belt and lap belt portions, a buckle is

selectively engageable with the junction ring to establish the lap and shoulder belt portions in restraining positions across the seat occupant, and the shoulder belt portion is wound by a seat belt retractor having a tension reliever permitting introduction of slack into the shoulder belt, said junction ring comprising:

a frame, a pin having the continuous loop belt passing thereabout, means mounting the pin on the housing for movement toward and away from the buckle, spring means urging the pin in the direction toward the buckle, a friction member adapted to frictionally engage with the belt on the opposite side thereof from the pin when the junction ring is engaged with the buckle to provide a one way



friction detent which enables the introduction of slack into the shoulder belt portion by the tension reliever of the seat belt retractor and yet prevents transference of the slack into the lap belt portion so that the lap belt portion remains taut about the occupant, said friction engagement of the friction member with the belt being terminated upon disengagement of the junction ring from the buckle so that the belt may pass freely therethrough, said spring means acting on the pin yielding upon the onset of an occupant restraint load to permit movement of the pin in the direction away from the buckle and the friction member so that the continuous loop belt is permitted to pass freely around the pin and through the junction ring to adjust the relative restraint lengths of the lap and shoulder belt portions.

4,452,470

TENSION RELIEVING MECHANISM

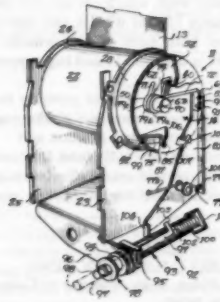
Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Jan. 20, 1982, Ser. No. 340,859

The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 280—802 **12 Claims**



1. In a safety belt retractor, a frame having opposed sides, a reel supported for rotation between said sides, said reel having a belt wound thereabout for protraction and retraction from the reel;

a reel shaft mounting the reel for rotation;

spring means biasing the reel to retract and to rewind the belt onto the reel;

a locking means for locking the belt against further protraction at the time of an accident;

a tension relieving means for reducing the belt tension from that being exerted on the protracted belt by said return spring;

said tension relieving means including an extension on said reel shaft having a friction surface thereon;

a single coiled spring mounted on said shaft extension and having a coil for frictionally engaging said friction surface with a contraction in size of the coil to hold said reel shaft against turning and rewinding the protracted belt thereby relieving tension of said spring means on the protracted belt worn by the occupant, said spring having a first tang connected at one end and a second tang connected at its other end, and

a control means for changing the size of said coil, said control means comprising a first engagement member integral with one of said sides to engage said first tang for releasing said friction surface for turning, second engagement means integral with said one side to engage said second tang for releasing said friction surface for turning, and a stop to engage said second tang for holding said friction surface against turning.

4,452,471

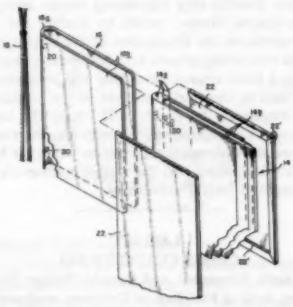
MEMORY BOOK

Richard A. Wessner, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.

Filed Jan. 15, 1982, Ser. No. 339,398

Int. Cl.³ B42D *3/08, 17/00*

U.S. Cl. 281—48 **2 Claims**



1. A book-type ornament adapted to be suspended from a Christmas tree bough or other like support, comprising:

a plurality of pliant inner sheets folded on themselves to provide pages;

a pliant outer sheet folded on itself to provide top and bottom cover portions, said pages being arranged between said cover portions with the fold lines of said inner and outer sheets being parallel and adjacent to each other;

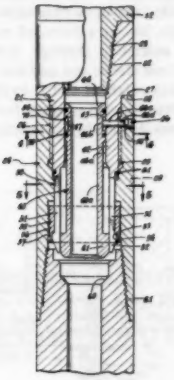
flexible elongated means received in aligned openings located at the fold lines of said inner and outer sheets, said means extending exteriorily of the fold line of said outer sheet to form a loop for suspending said ornament; and

a planar outer element overlying the exterior surface of each of said cover portions, said outer elements being dimensioned to expose the fold line of said outer sheet, each of said outer elements having inturned peripheral flanges, around a portion of the periphery thereof, overlapping the edges of a respective one of said cover portions, said outer elements being metallic and said inner and outer sheets being non-metallic.

4,452,472
TUBULAR SAFETY JOINT FOR DRILL STRINGS

Gary M. Crase, Cypress, Calif., assignor to Smith International Inc., Newport Beach, Calif.

Filed Aug. 28, 1981, Ser. No. 297,187
Int. Cl.³ F16L 37/00, 55/00, 39/00
U.S. Cl. 285—3 8 Claims

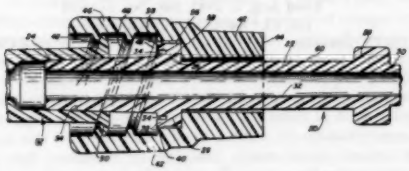


8. A releasable coupling for a tubular string comprising an outer tubular member, an inner tubular member telescopically positioned in said outer tubular member means for coupling said inner and outer tubular members in said tubular string, collet fingers connected to said inner tubular member and engaging a shoulder on said outer tubular member, a piston sleeve telescopically positioned in said inner tubular member, said piston sleeve formed with a holding section for said collet fingers in engagement with said shoulder to lock together said inner and outer tubular members, a sleeve containing said shoulder and axially adjustably mounted on said outer tubular member.

4,452,473
LUER CONNECTION SYSTEM

Ricky R. Ruschke, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 26, 1982, Ser. No. 401,571
Int. Cl.³ F16L 35/00, 25/00
U.S. Cl. 285—81 19 Claims

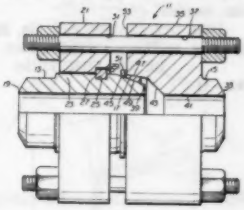


1. A luer connector which comprises:
a main body portion;
a front luer portion;
an internally threaded locking ring that is axially slidable along the main body portion of the luer connector, the luer connector being adapted to couple to a mating luer device which has means for frictionally receiving the front luer portion and for threadedly receiving the internally threaded locking ring;
a collar carried by the luer connector between the main body portion and the front luer portion; and
a flexible member carried by the luer connector which flexible member flexes to a stressed position when the locking ring is in threaded engagement with the mating luer device, to provide some stress in the threaded engagement;
said flexible member being carried by the collar, to provide a resilient interrelationship between the collar and locking ring when the locking ring is in threaded engagement with the mating luer device;
said flexible member comprising a portion of the collar defined by a slot, which collar portion flexes to a stressed position by its engagement with an interior wall of the locking ring when the locking ring is in threaded engagement with the mating luer device.

4,452,474
HIGH PRESSURE FLOW LINE CONNECTION

Robert C. Hagner, P.O. Box 40082, Houston, Tex. 77240

Filed Aug. 25, 1982, Ser. No. 411,498
Int. Cl.³ F16L 25/00
U.S. Cl. 285—334.1 6 Claims



1. A high pressure flow line connection useful in the prevention of seal leakage and blow out problems, said connection comprising:
a tubular male member having an end portion with an inwardly tapered frusto-conical exterior surface having a maximum outside diameter and an angle of taper with respect to the axis of the male member and an axial length, said tapered exterior surface terminating in an end having a minimum outside diameter, said minimum and maximum outside diameters being subject to manufacturing tolerances;
a tubular female member coaxially generally matingly aligned with said male member and including an end portion having an outwardly tapered frusto-conical interior surface having an angle of taper with respect to the axis of the female member that is less than the angle of taper of the end portion of the male member and said female member end portion interior surface terminating at an outer end having a maximum inside diameter;
means for urging said male and female members coaxially matingly toward each other;
and a seal ring including a frusto-conical inner surface having an angle of taper substantially equal to the angle of taper of the male member end portion exterior surface and a frusto-conical outer surface having an angle of taper substantially equal to the angle of taper of the female member end portion interior surface and said seal ring including an annular lip extending radially outwardly from said seal ring outer surface adjacent the maximum outside diameter of said seal ring surface, said seal ring being positioned coaxially between said male and female members with said seal ring inner surface engaging said male member end portion exterior surface and a portion of said seal ring outer surface engaging said female member end portion interior surface, said seal ring having an axial length less than the axial length of the male member end portion and having a minimum inside diameter greater than the minimum outside diameter of said male member end portion and a maximum inside diameter less than the maximum outside diameter of said male member end

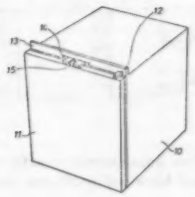
portion, whereby said inner surface of said seal ring is positioned on said male member end portion entirely between said maximum and minimum outside diameters of said male member end portion, said minimum and maximum inside diameters of said seal ring being subject to manufacturing tolerances, and the maximum outside diameter of said seal ring outer surface adjacent said lip is greater than the maximum inside diameter of said female member end portion such that said lip remains spaced apart from the end of the end portion of the female member as said male and female members are urged together but a sufficient portion of said seal ring outer surface engages said female member tapered surface to provide a seal there between.

4,452,475

DOOR LATCHING DEVICE

Einer Bloch, Rungsted Kyst, Denmark, and Leif J. E. Strindberg, Täby, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 29, 1980, Ser. No. 202,011
Claims priority, application Sweden, Nov. 1, 1979, 7909047
Int. Cl.³ E05C *17/56*
U.S. Cl. 292—31 **10 Claims**



1. A latching device for use in a refrigerator in a house trailer or the like comprising: a magnetic strip that retains the refrigerator door in a closed position against a door frame of the refrigerator cabinet with a force which is sufficient when the trailer is parked, but insufficient when the door upon movement of the trailer is exposed to a greater force of inertia in the direction outwardly from the door surface, a catch on said refrigerator door, a movable latching means mounted on the door frame of said refrigerator cabinet, a spring, said latching means being disposed separately from the magnetic strip and arranged under the influence of the force of inertia in a direction to move said door out of engagement with the cabinet, and against the action of said spring to be brought into a latching position against said refrigerator catch, the force of the spring being selected so as to move said latching means out of engagement with said catch when the action of the said force of inertia is less than the door latch retaining force.

4,452,476

SECURITY DEVICE

Donald M. Stole, Rte. 3, Box 295, Sherwood, Oreg. 97140

Filed Mar. 2, 1981, Ser. No. 239,662
Int. Cl.³ E05C *17/36*
U.S. Cl. 292—150 **7 Claims**

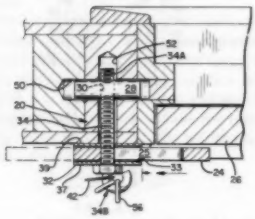
1. A dead man type security device adapted for mounting in a door jamb to selectively permit and prevent opening of a door, comprising:

(a) a sleeve having spaced apart front and back major faces, top and bottom minor faces and opposing open ends, said sleeve defining a channel of predetermined cross section extending through said sleeve from one said end to the other, a central throughbore extending through said sleeve from said front face through said back face, and an aperture extending through said top face adjacent one of said ends;

(b) a slide member, slidably mounted in said channel of said sleeve, said slide member being selectably moveable longitudinally through said sleeve, and defining an elongate slot extending therethrough, part of said slot being aligned with said central throughbore continuously as said slide member is moved within said channel, and defining a pair of spaced-apart blind bores in said slide member each said blind bore being aligned with said aperture at a different location said slide member within said channel;

(c) an elongate bolt, having a threaded end and an enlarged end, rotatably extending through both of said central throughbore of said sleeve and said slot of said slide member such that said enlarged end is engaged by said front face and said threaded end projects from said back face;

(d) dead man means detachably connected to said bolt and



adapted to be located within a door jamb for fastening said sleeve and said slide member to said door jamb, said dead man means defining thread means located therein for receiving said threaded end of said bolt in threaded engagement therewith;

(e) an elongate flexible connecting member having opposing ends, one of said ends being mounted upon and mechanically fastened to said enlarged end of said bolt member; and

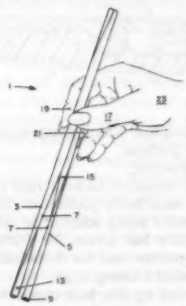
(f) an elongate pin, one end thereof detachably and movably extending through said aperture of said sleeve into one of said blind bores of said slide member, for selectively preventing lateral movement of said slide member relative to said sleeve said pin being attached to the other of said opposing ends of said flexible connecting member.

4,452,477

MANIPULATABLE IMPLEMENT

Duane S. Hardy, 32 E. Riding Dr., Carlisle, Mass. 01741

Filed Aug. 8, 1983, Ser. No. 521,092
Int. Cl.³ A47G *21/10*; B25B *9/00*
U.S. Cl. 294—16 **5 Claims**



1. A manipulatable implement for use in clamping upon an object, or in picking up small objects, or for use in picking up

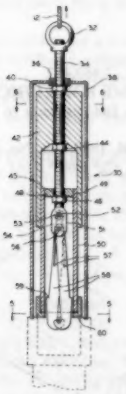
and holding food, said manipulatable implement comprising a cylinder halved into two separate parts, each of said two separate parts having, in integral, one-piece construction, cooperating means responsive to manipulative pressure applied upon said two separate parts, together with constrained relative sliding movement of said two separate parts, to cam open and close said two separate parts in clamping upon an object, or in picking up small objects, or in picking up and holding food.

4,452,478

NUCLEAR WASTE STORAGE PROCESS AND SYSTEM

Floyd M. Dulaney, 199 Tollview Road, Elgin, Ill. 60120

Filed Aug. 11, 1980, Ser. No. 177,177
Int. Cl.³ E21B *31/00, 31/12;* G21F *9/22*
U.S. Cl. 294—86.28 **6 Claims**



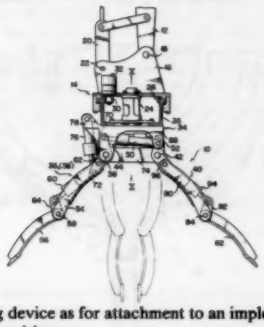
1. A system for depositing a container in a vertical shaft, said system comprising a hoisting means; an elongated plunger rod secured at one end to said hoisting means; a pair of elongated arms each having one end pivotally mounted on the other end of said plunger rod for movement between an opened and a closed position, each of said arms terminating at the other end in a bight, the bights confronting each other to form a loop when said arms are in the closed position for releasably engaging said container; spring-biased means interconnected between said pair of arms for normally urging said pair of arms to said opened position; a first capsule slidably mounted on said plunger rod, said capsule having an excursion limited by an upper and lower abutment on said plunger rod and being shaped to surround and embrace said pair of arms to lock said arms in said closed position when said capsule rests on said lower abutment and to enable said pair of arms to open when said capsule is a predetermined distance above said lower abutment; a weight affixed to said plunger rod above said upper abutment; a second capsule slidably mounted on said plunger rod, said second capsule having an excursion limited by said hoisting means at the upper end by said weight at the lower end and being shaped to surround said weight and first capsule.

4,452,479

GRIPPING DEVICE WITH INTERDIGITATING, ARTICULATE FINGERS

Akio Terai; Takashi Miyauchigo, and Hiroshi Ota, all of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,546
Claims priority, application Japan, Apr. 14, 1979, 54-117283; Sep. 14, 1979, 54-126212[U]
Int. Cl.³ B25B *1/00*
U.S. Cl. 294—88 **3 Claims**



1. A gripping device as for attachment to an implement arm or the like, comprising:

(a) mounting means;

(b) at least two parallel spaced articulate fingers connected to the mounting means for pivotal motion about a first pivot;

(c) at least one other articulate finger connected to the mounting means for pivotal motion about a second pivot parallel to the first pivot and disposed in interdigitating relation with the first recited two articulating fingers;

(d) each of the articulate fingers having a first segment pivotable about the first or second pivot and a second segment pivotally connected to the first segment;

(e) means for pivotally moving the first segments of the articulate fingers relative to the mounting means;

(f) means for pivotally moving the second segments of the articulate fingers relative to the first segments thereof; and

(g) means for pivotally moving the second pivot about the first pivot.

4,452,480

RECORD HANDLING DEVICE

Bruce R. Maier, and Jon M. Risch, both of Columbia, Mo., assignors to International Jensen Incorporated, Schiller Park, Ill.

Filed Dec. 21, 1981, Ser. No. 332,821
Int. Cl.³ B25J *15/00*
U.S. Cl. 294—104 **17 Claims**

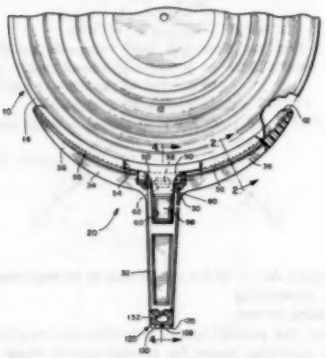
1. A device for handling a record having a peripheral edge, said device comprising:

a frame defining a handle and a record contacting member coupled to the handle, said contacting member shaped to receive a record and to contact an arcuate peripheral edge of the record at at least three non-colinear points spaced along the peripheral edge, said record contacting member having an inner edge, and outer edge, two spaced side walls and a base, the side walls adjoining the base at an oblique angle at the inner edge of the contacting member, such that the side walls and the base together define a beveled groove, and said side walls each further defining a rounded inwardly sloped lip at the outer edge of the contacting member, said sloped lips adapted to guide the peripheral edge of the record into the beveled groove

when the contacting member is brought into contact with one of the non-colinear points along the peripheral edge of the record;

a record retaining member defining a record gripping surface;

means for mounting the record retaining member to the frame such that the record gripping surface is positioned to contact and frictionally engage the peripheral edge of the record and the retaining member is movable between an open position, in which the record can be inserted into and removed from the contacting member, and a closed position, in which the peripheral edge of the record is captured between the gripping surface and the contacting



member, so that the frame is securely coupled to the record;

an operating surface defined by the retaining member, said operating surface positioned such that pressure applied to the operating surface operates to move the retaining member to the open position; and

biasing means for automatically returning the retaining member to the closed position whenever pressure is absent from the operating surface and for maintaining the retaining member in the closed position with sufficient force to hold the record firmly and securely between the gripping surface and the contacting member until pressure is reapplied to the operating surface.

4,452,481

LIFTING TONGS

James N. Williams, 335 Cooper St., Woodbury, N.J. 08096

Filed Jan. 13, 1982, Ser. No. 339,108

Int. Cl.³ B66C *1/00*

U.S. Cl. 294—118 **6 Claims**

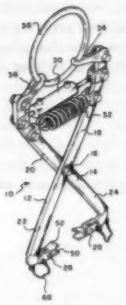
1. Lifting tongs for a crane comprising:

a pair of tong arms, said tong arms being pivoted together about a first axis intermediate the ends thereof thereby forming an upper tong arm portion and a lower tong arm portion on each tong arm;

means for moving said lower tong arm portions toward and away from each other,

a jaw adapted to be mounted to the end of each of said lower tong arm portions; and

each of said jaws being pivotally movable about an axis parallel to said first axis into a plurality of different posi-



tions and including means for locking each jaw in its desired position.

4,452,482

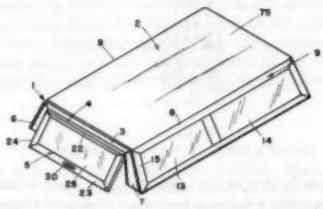
HATCH FRAME FOR VEHICLE CAPS

Richard L. Grise, Bristol, Ind., assignor to R & T Frames, Inc., Elkhart, Ind.

Filed Nov. 24, 1980, Ser. No. 209,581

Int. Cl.³ B60P *3/42*

U.S. Cl. 296—10 **16 Claims**



1. In a vehicle cap and the like, having a framework with front, back and opposite side portions, the improvement of a hatch frame, comprising:

an upper frame segment having a hinge member pivotally supporting a hatch door thereon;

first and second side frame segments extending along the sides of said hatch door in a closed position, and being connected with the framework of said vehicle cap; and

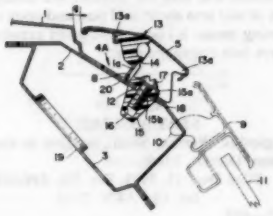
means for connecting said first and second side frame segments with opposite ends of said upper frame segment to form an inverted, generally U-shaped hatch frame; said side frame segments including an integrally formed, recessed ledge, which extends along the interior edges of said side frame segments, and is shaped to receive at least a portion of said hatch door therein,

a seal positioned between said hatch frame and said hatch door, whereby said hatch frame both pivotally mounts said hatch door therein with a weathertight seal, and structurally interconnects the side portions of said framework without intermediate framing.

4,452,483
AUTOMOBILE ROOF STRUCTURE

Hisae Kano, Tokyo; Hideo Suzuki, and Hideo Nakao, both of Tochigi, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1982, Ser. No. 362,076
Claims priority, application Japan, Apr. 1, 1981, 56-49211
Int. Cl.³ B62D 25/06
U.S. Cl. 296—213 8 Claims

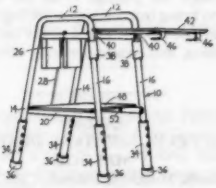


1. A structure for attaching a drip moulding to a roof panel of an automotive vehicle, comprising:
the roof panel having a flange at a side edge thereof;
a roof side rail outer panel joined to the roof panel at a side edge portion of the roof panel;
the flange of the roof panel being bent upwardly to form a drip channel;
a clip made of resin and having a flange-receiving groove, a snap portion and holding portions;
the flange-receiving groove receiving and engaging the flange of the roof panel;
the roof side rail outer panel having an attaching hole formed therein;
the snap portion of the clip being inserted into the attaching hole of the roof side rail outer panel so that the clip is fixedly attached to the roof side rail outer panel;
said holding portions securing the drip moulding to the clip whereby the drip moulding is indirectly attached to the flange of the roof panel.

4,452,484
WALKER

Peter M. Pastor, Lot 64, R.D. 3, Ridge Ave., Cardiff, N.J. 08232

Filed Oct. 13, 1981, Ser. No. 310,388
Int. Cl.³ A47D 13/04
U.S. Cl. 297—6 3 Claims

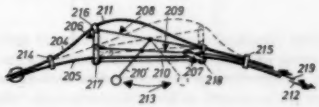


1. In a three-sided walker comprising two parallel essentially horizontal frame members wherein each frame member has extending downwardly therefrom two legs with an upper support rod and a lower support rod disposed between said legs and with each leg in line with the other and wherein an upper support rod and a lower support rod each extend between the legs at the front of the walker to thereby create a walker having two front legs and two rear legs, wherein the improvement comprises:
a. a tray having slidable support means removably mountable within brackets disposed on the rear legs of the walker, with said tray further having hook means engageable on a support rod;
b. a removably mountable seat whose two lateral edges each extend beyond and rest upon a respective lower support rod of the legs of each horizontal frame member, with said seat having lateral movement stop means and further having hook means engageable on a support rod; and
c. a back rest disposed behind and mounted to the upper support rod extending between the legs at the front of the walker.

4,452,485
FLEXIBLE ELASTIC SUPPORT

Wilhelm Schuster, Neubauzeile 57, A 4020 Linz-Donau, Austria

Division of Ser. No. 51,238, Jun. 22, 1979. This application Dec. 23, 1981, Ser. No. 334,471
Claims priority, application Austria, Jun. 23, 1978, 4599/78
Int. Cl.³ A47C 25/00
U.S. Cl. 297—284 7 Claims



1. A flexible elastic supporting structure comprising:
an elongate flexible and longitudinally substantially inextensible and incompressible band forming a support belt;
an elongate flexible and generally flat element forming a tension belt secured at a first end thereof to a first end of said band, said support and tension belts having mutually confronting broad sides and extending generally codirectionally with each other;
retaining means engaging second ends of said belts for holding said second ends close to each other while maintaining said tension belt under stress whereby a convex curvature away from said tension belt is imparted to said support belt with a peak at an unrestrained central portion thereof; and
manually displaceable adjustment means coupled with said support belt at a fixed intermediate location disposed between one of said ends thereof and said unrestrained central portion for varying the spacing of said belts from each other at said location, thereby modifying said convex curvature with a shift of said peak in a range lying between said location and said retaining means.

4,452,486
CHAIR TYPE FURNITURE

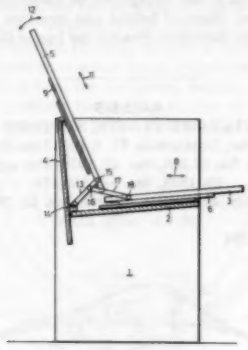
Otto Zapf, Ölmühlweg 33B, D-6240 Königstein, and Josef Kuchinke, Untergasse 7, D-6730 Oberursel 6, both of Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,374
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 8025516[U]
Int. Cl.³ A47C 1/02
U.S. Cl. 297—343 4 Claims

1. A reclinable chair comprising;
a frame;
a seat portion, means to guide said seat portion in a horizontal direction forwardly and backwardly;
a backrest, means to guide said backrest in relation to said frame; and
further comprising a joint interconnecting said backrest to said frame;
articulation means to move said seat portion and backrest in relation to said frame;
a spring being interconnected to said seat so as to pull said seat portion in its guide means and, in turn, said back rest in its guide means to a neutral position whereat said seat

portion is in its rearward position and the back rest is in its upright position;

said articulation means comprising a first bar being pivotally connected at its lower end to said frame and pivotally connected at its upper end to said backrest, and a second bar pivotally connected at one end to said first bar and at



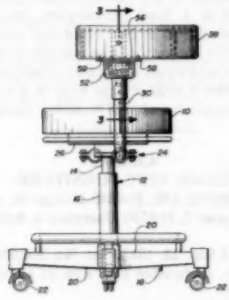
the other end to said seat portion; whereby said chair is displaceable from the neutral position to a reclined rest position with practically no forces being exerted between the backrest and the user's back and with continuous support of the lumbar region of the user, and then being returnable to said neutral position.

4,452,487

OPERATORY STOOL WITH ADJUSTABLE ARM

Richard E. Plowman, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Aug. 11, 1981, Ser. No. 291,895
Int. Cl.³ A47C 7/54
U.S. Cl. 297—411 **5 Claims**



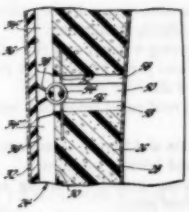
1. An operatory stool comprising in combination, a seat, support means for said seat depending therefrom, a post extending upward from said seat adjacent an edge thereof, and a curved arm supported by the upper end of said post within a plane transverse to said post, the improvement comprising a post section reciprocably mounted upon the upper portion of said post for vertical movement in opposite directions and the upper end of said post section being connected to said arm to support it, coengageable rotation control members including a circular member coaxial with the axis of said post and provided with a series of radial recesses in the upper end thereof and a pin member extending transversely through said post section and positionable selectively in one or more of said recesses to prevent relative rotational movement between said circular member and post section about the axis of said circular member when said pin member and one of said recesses are coengaged, a cylindrical housing fixedly connected to the lower surface of said curved arm and enclosing said circular member and pin, and spring means within said housing and interengageable between said pin member and circular member and operable normally to urge said members into coengagement to prevent relative rotation between said post and arm, whereby when said arm is moved upward a predetermined distance said member with recesses and said pin member are disengaged to permit rotation of said arm about said post and upon release of said arm said spring means is operable to assist gravity in restoring said members into coengagement.

4,452,488

SEAT ASSEMBLY

Algis J. Rugienius, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1981, Ser. No. 329,658
Int. Cl.³ A47C 7/02
U.S. Cl. 297—452 **4 Claims**



1. A seat assembly comprising, in combination, a hollow molded seat support including spaced walls and a series of spaced pairs of depressions extending inwardly from one wall to the other wall thereof, the one wall intermediate each pair of depressions being formed into a generally V-shaped rib portion, the walls of which merge into the depressions of such pair, a resilient foam cushion including a lower wall seating on the one wall of the seat support, a spaced upper wall, and an access passage through the cushion between the upper and lower walls opening to each of the rib portions, a seat cushion anchor member spanning the passage adjacent each rib portion, a hog ring type fastener encircling the anchor member and extending through and around each of the rib portions to secure the cushion to the seat support, the fasteners being insertable through the passage from the upper wall of the cushion prior to being installed in encircling relationship to the anchor member and rib portion, a cover over the seat support and foam cushion, and means securing the cover to the seat support.

4,452,489

MULTIPLE LEVEL METHANE DRAINAGE SHAFT METHOD

Walter L. Richards, Huntington Beach, Calif., assignor to Methane Drainage Ventures, Placentia, Calif.

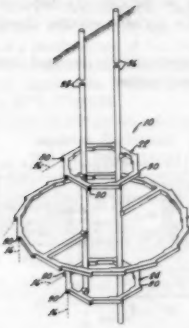
Filed Sep. 20, 1982, Ser. No. 420,149
Int. Cl.³ E21C 41/10; E21B 43/30
U.S. Cl. 299—2 **15 Claims**

1. A method for collecting gas from subterranean formations having a plurality of spaced apart seams containing said gas, said method comprising the steps of:

drilling at least one shaft from the earth's surface to a depth sufficient to intersect a plurality of seams containing gas to be collected;

excavating a working area at selected seams with each said working area communicating with said shaft, and said selected seams;

drilling a plurality of boreholes from each of said working areas into the seams; and



collecting gas from said boreholes and conducting said gas through said working areas and through said shaft to the earth's surface.

4,452,490

TREATMENT OF SUBTERRANEAN URANIUM-BEARING FORMATIONS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 179,549, Aug. 19, 1980, Pat. No. 4,346,936. This application Jul. 22, 1982, Ser. No. 400,803

Int. Cl.³ E21B *43/28*; E21C *41/14*

U.S. Cl. 299—4 **14 Claims**

2. A process for the borehole slurry mining of uranium which comprises:

(a) drilling suitably spaced injection and production wells into a uranium-bearing formation,

(b) injecting into said formation under pressure a mixture of CO_2 and O_2 gases,

(c) shutting in the production wells, after the gases injected in step (b) have broken through at the production well for a period of about 1 to 20 weeks,

(d) injecting additional amounts of a mixture of CO_2 and O_2 gases into the formation as the pressure falls to a low level until the uranium is said formation is substantially completely oxidized,

(e) injecting a carbonate ion-containing lixiviant and water through the injection wells into the formation under pressure, so as to dislodge portions of the formation in the form of a slurry, and

(f) removing said slurry from the formation through the production wells.

4,452,491

RECOVERY OF HYDROCARBONS FROM DEEP UNDERGROUND DEPOSITS OF TAR SANDS

Leonard Seglin, New York, N.Y., and Erik Saller, Stanford, Conn., assignors to Intercontinental Econergy Associates, Inc., New York, N.Y.

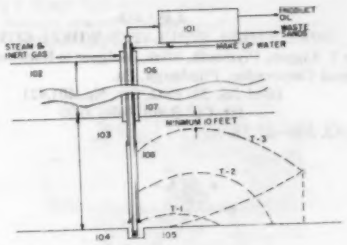
Filed Sep. 25, 1981, Ser. No. 305,557

Int. Cl.³ E21B *43/24*

U.S. Cl. 299—5 **5 Claims**

1. In a method of mining tar sands which are in beds too deep below the surface to be economically mined by stripping the overburden, and in which a well is sunk through the overburden and the tar sands layer into the underlying bedrock, the well is cemented to the overburden and a hot aqueous fluid is injected into the well and directed against the tar sands to heat the surface of the sands to render the tar therein sufficiently fluid so that it can be slurried into the aqueous fluid, and the slurry is forced up the well to a recovery system on the surface, while maintaining a sufficiently high pressure in the well with a non-condensable gas to support the overburden, the improvement which comprises:

(a) Maintaining at least a ten foot thick ceiling of tar sands in the cavity throughout the operations of mining and backfilling in order to provide an gas-impermeable seal and hence preventing the roof from falling in; and



(b) Backfilling the cavity after primary hydraulic mining is completed, and before depressurization, with spend sand and aqueous fluid to both ensure against collapse of the cavity after depressurization and to dispose of the sand in an ecologically acceptable manner, whereby energy requirements and surface subsidence are minimized.

4,452,492

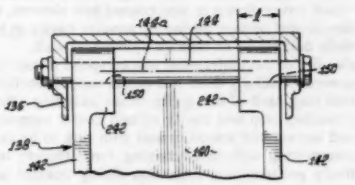
OSCILLATED HEAD WITH BEARING SUPPORT, FOR FLOOR STRIPPING MACHINE

Palmer Grasse, 1407 Lee Dr., Glendale, Calif. 91201, assignor to Palmer Grasse, Glendale, Calif.

Continuation-in-part of Ser. No. 329,523, Dec. 10, 1981, Pat. No. 4,365,843, which is a continuation-in-part of Ser. No. 318,827, Nov. 6, 1981, Pat. No. 4,365,842. This application Nov. 22, 1982, Ser. No. 443,327

Int. Cl.³ A47L *11/12*

U.S. Cl. 299—37 **16 Claims**



1. For use in power-operated floor stripping apparatus that includes a frame, a drive carried on the frame, wheels supporting the frame, a handle to guide the frame, and a cutting blade carried by a head which is pivotally mounted to the frame, the improvement comprising

(a) a connecting element having a first tubular part and a second tubular part, said parts having spaced parallel axes, said second tubular part pivotally connected to the head,

(b) a drive shaft extending within said first tubular part, said shaft operatively connectible to the drive to be rotated thereby,

(c) said drive shaft carrying two axially spaced eccentrics to be rotated by the shaft, there being a lubricant receiving space located directly between said eccentrics,

(d) two annular bearings respectively carried by and within said first tubular part, said bearings respectively receiving said spaced eccentrics to oscillate said first tubular part, said head and said blade as said eccentrics are rotated by the shaft,

(e) said head consisting of lightweight metal and having two flanges interconnecting by a web, the flanges being locally thickened to substantial extent to define two lugs,

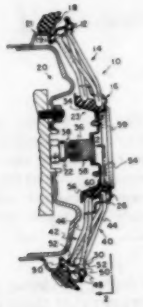
(f) and bearing bushings received in and carried by said lugs to form bearing openings for a pivot shaft connected to the frame, said bushings being self-lubricated adjacent the shaft.

4,452,493

WIRE WHEEL SIMULATED WHEEL COVER

John V. Liggett, Plymouth, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jul. 23, 1982, Ser. No. 401,421
Int. Cl.³ B60B *7/04, 7/06*
U.S. Cl. 301—37 SS **10 Claims**



1. A wheel cover device capable of being mounted on a vehicle wheel for rotation therewith, said wheel including a central hub element and a rim, said wheel cover device comprising:

an annular trim ring capable of making firm, non-sliding contact with said rim when said wheel cover device is mounted on said wheel;

a center support section including means for fastening said wheel cover device to said central hub element, said center support section having an annular cavity at least partially defined by an interior cylindrical wall;

a plurality of circumferential spaced spoke means extending generally radially from said center support section to said trim ring, each of said spoke means including a first end in extending into said cavity of said center support section and second end joined to said trim ring to be capable of transmitting sufficient retaining force thereto to collectively produce said firm, non-sliding contact with said rim; and

biasing means mounted within said cavity of said center support section between said first end of each of said spoke means and said interior cylindrical wall to be capable of providing said retaining force on said first end of each of said spoke means when said means for fastening is fully installed on said central hub element.

4,452,494

HYDRAULIC PRESSURE CONTROL VALVE FOR A DUAL-CIRCUIT HYDRAULIC BRAKING SYSTEM

Shinkichi Kadota, Hamamatsu, Japan, assignor to Nissan Motor Company, Ltd., Yokohama and Rhythm Motor Parts Mfg. Co., Ltd., Hamamatsu, both of, Japan

Filed Aug. 27, 1981, Ser. No. 297,021
Claims priority, application Japan, Aug. 30, 1980, 55-120186
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **14 Claims**

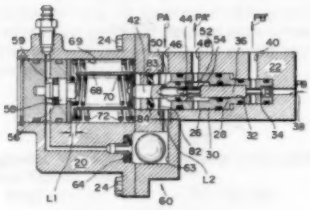
1. In a dual circuit hydraulic braking system for a wheeled vehicle, a pressure control valve comprising:

a housing having a first stepped bore therein;

a first plunger reciprocatively received in said first stepped bore, said first plunger having a second bore formed therein;

a second plunger reciprocatively disposed in said second bore to define a variable volume chamber in said first plunger;

a free piston reciprocatively disposed totally within said variable volume chamber;



a first valve disposed in said first plunger and positioned to directly abut said free piston;

a second valve disposed in said second plunger and positioned to directly abut said free piston; and

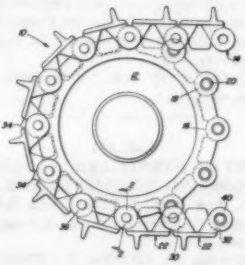
means responsive to the deceleration of said vehicle for applying a bias to said second plunger.

4,452,495

DRIVE SPROCKET AND TRACK CONFIGURATION

Nicolae V. Orlandea, Romania, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 23, 1982, Ser. No. 371,085
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—11 **2 Claims**



1. An endless track, adapted for use with a drive sprocket having a plurality of teeth defined by rotatably mounted rollers, comprising: a plurality of track sections; pivot pin means pivotally interconnecting adjacent ends of adjacent sections for flexure about a pivot axis; and said adjacent ends having respective sprocket roller-engaging surfaces formed arcuately about said pivot axis and dimensioned for simultaneously embracing a sprocket roller when the latter moves into a position wherein it is coaxial with said pivot axis.

4,452,496

TRACKED VEHICLES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

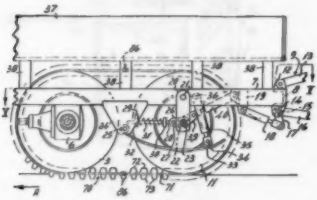
Continuation of Ser. No. 210,020, Apr. 10, 1980, Pat. No. 4,362,340, which is a continuation of Ser. No. 895,024, Apr. 10, 1978, abandoned. This application Jun. 1, 1982, Ser. No. 383,730

Claims priority, application Netherlands, Apr. 15, 1977, 7704127; Apr. 15, 1977, 7704128

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.³ B62D *55/24*

U.S. Cl. 305—35 EB **29 Claims**



1. In combination with an agricultural vehicle having a pair of rear wheels with pneumatic tires thereon in tandem on each side thereof which are adapted to receive a removable endless track which connects each said pair of wheels whereby it extends around said pair of tires and moves therewith, at least one of said wheels of each said pair mounted on an axle, the axis of which is retained substantially at a fixed distance under said frame when said track is installed, each said track having a readily connectible and disconnectible connection between opposite ends, lifting means centered between said pairs of wheels as seen from the rear and comprising pivot means mounted on each side of the frame of said vehicle forward of at least one of said tires in each said pair of wheels, a pressure plate for bearing the weight of the rear part of the vehicle, the forward and greater part of which is slightly curved as seen from the side, pivotally connected to both said pivot means at its forward end, said pressure plate having a width substantially equal to the width between the outer sides of said vehicle frame and being so constructed and arranged that the rear part of the weight of the vehicle is distributed substantially continuously transversely across a comparatively large surface of said pressure plate and said wheels on each side thereof are lifted substantially an equal distance relative to said pressure plate and the underlying ground when the rear part of the vehicle is supported thereby, selectively powered extensible means pivotally interconnecting said pressure plate near its rear end to said frame, said extensible means adapted to cause said pressure plate to be pressed against the ground between said wheels and simultaneously lift said wheels so that said tires mounted thereon are simultaneously raised a substantially equal distance above the ground and said tracks can be rapidly installed or removed.

4,452,497

GREASE SEAL FOR BEARING ARRANGEMENT

Paul J. Zillhardt, Reading, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 422,406, Sep. 20, 1982, abandoned, which is a continuation of Ser. No. 214,355, Dec. 8, 1980, abandoned. This application Aug. 1, 1983, Ser. No. 519,423

Int. Cl.³ F16C *33/78*

U.S. Cl. 308—187.1 **4 Claims**

1. A frictionless bearing assembly for mounting on a shaft and having an improved sealing construction, said bearing comprising:

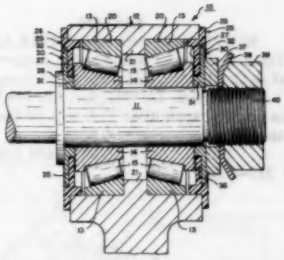
(a) an inner bearing race mounted on the shaft with one end positioned adjacent an annular collar on the shaft;

(b) an outer bearing race concentrically surrounding said inner race;

(c) rotatable bearing elements disposed between said inner and outer races;

(d) an outer housing in contact with and surrounding said outer race;

(e) a first sealing element mounted on said outer housing and having a flange that extends radially inwardly from the outer housing toward the shaft and in contact with the outer surface of said inner bearing race;



(f) a second sealing element having an enlarged hub portion mounted on the shaft and having a flange portion that extends radially outwardly from said hub portion toward said outer housing and is in sliding contact with the flange of said first sealing element;

(g) fastening means secured to the shaft to exert axial stress against said second sealing element to hold the bearing assembly in operating condition.

4,452,498

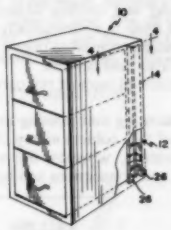
CABINET DRAWER INTERLOCK

Ronald L. Wood, Jr., and Robert J. Tempas, both of Bensenville, Ill., assignors to B & W Corporation, Bensenville, Ill.

Filed Apr. 7, 1982, Ser. No. 366,226

Int. Cl.³ E05C *15/04*

U.S. Cl. 312—216 **1 Claim**



1. In a device for interlocking drawers in vertically tiered filing cabinets having a pivoting vertical locking member mounted within the cabinet and an L-shaped bracket mounted to each drawer for engaging the locking member, the improvement comprising:

a locking member being dimensionally and geometrically compatible with interior corners of the cabinet, the member being mounted in juxtaposition substantially within a selected interior corner of the cabinet, said member being parallely juxtaposed to the cabinet side wall defining the selected interior corner, said member having two elongated perpendicular legs secured to a columnar hinge shaft at the apex of the right angle defined by said legs, the shaft defining a vertical axis around which the legs arcuately swing within the selected interior corner; and

at least two abutment blocks mounted to said cabinet side wall, the blocks being positioned on the cabinet side wall so that each leg abuts against one of the blocks to limit arcuate swing of the legs to 90°, whereby said member is in a locked position when the right angle defined by the legs is geometrically coinciding with the right angle defined by the selected cabinet interior and said member is in an unlocked position when the right angle defined by the legs is geometrically non-coinciding with the right angle defined by the selected cabinet interior corner.

4,452,499

SERVICE STAND FOR WORK AREA

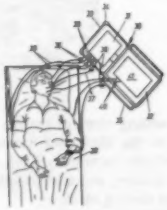
Goris Verburg, Maarn, Netherlands, assignor to Zumtobel GmbH & Co., Lindau, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,511

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106255

Int. Cl.³ A47B *77/08*; **F16M** *3/00*

U.S. Cl. 312—223 **28 Claims**



1. A service and supply stand comprising:
an upright column having a front wall, a back wall, and a pair of opposite sides;
a plurality of lines in said column for conduction of fluids and electricity;
a plurality of connection supports forming a portion of said front wall and carrying respective groups of connections connected to said lines;
a horizontal and annular support rail carried on and spacedly surrounding said column adjacent said connection supports and lying in a substantially horizontal plane;
a device housing secured to one of said sides and projecting laterally from said column;
another horizontal support rail carried on said device housing; and
means for securing said housing and its support rail to said one side of said column at any of a plurality of vertically offset positions, whereby the vertical spacing between said rails and connections can be varied.

4,452,500

TAMPER-RESISTANT DEODORANT CABINET

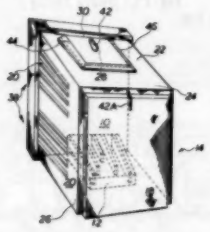
Arnold H. Zlotnik, 1000 Sullivan Dr., Homestead, Pa. 15120

Filed Apr. 7, 1982, Ser. No. 366,294

Int. Cl.³ A47B *77/08*; **A62B** *7/08*

U.S. Cl. 312—236 **5 Claims**

1. A tamper-resistant cabinet for containing deodorant materials for dispersal into the atmosphere, comprising:
a back plate adapted for mounting to a supporting surface;
shelf means connected to said back plate and arranged to fit within said cover, said shelf means adapted to support a tray including dividers that are spaced apart such that said deodorant materials are received and maintained on one edge between said dividers;
a cover member having a keyway provided through at least one wall member thereof;
hinge means for pivotally fastening said cover member to said back plate to facilitate relative motion from an open position to a closed position therebetween, wherein said closed position defines a condition in which said deodorant materials are not removable from said cabinet, wherein said open position defines a condition in which said deodorant materials are removable from said cabinet;
latch means mounted on an internal surface of said cover member spaced from said hinge means;
a strike plate connected to said back plate having an engaging member of a general sawtooth from adapted for engaging said latch means when said cover member is disposed in said closed position to retain said cover member in said closed position; and
flexible resilient connecting means for mounting said strike plate to said back plate within the interior of said cabinet when said cover member is in said closed position, wherein said strike plate is positioned to be biasable in a first direction whereby said connecting means is flexed to disengage said engaging member from said latch means only through the insertion of a suitably shaped rigid object through said keyway.



4,452,501

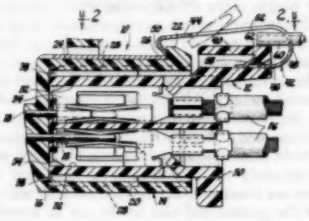
ELECTRICAL CONNECTOR WITH LATCH TERMINAL

Joseph H. Gladd, Cortland; Robert G. Plyler, Vienna, and Lyle B. Suverison, Fowler, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1982, Ser. No. 373,408

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—91 R **3 Claims**



1. An electrical connector comprising:
a pair of mating dielectric connector bodies,
a plurality of electrical contacts in each connector body which engage the electrical contacts in the other connector body when the connector bodies are coupled,
a projection on one connector body and a cooperating lock arm on the other connector body having a hook at a free end thereof engaging the projection to lock the coupled connector bodies together,
an electrical contact on the one connector body immediately behind the projection which is engaged by the hook when it engages the projection, and
a resilient metal clip which includes said lock arm and a tab connected to the lock arm,
said resilient metal clip being attached to the other connec-

tor body by the tab and having a central slot beginning rearwardly of the hook for attaching a conductor to the clip.

4,452,502
WIRE CONNECTOR FOR TELECOMMUNICATIONS CABLES

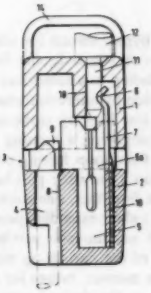
Horst Forberg, and Manfred Müller, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,593

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1981, 3113757

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—99 R **6 Claims**



1. A wire connector for connecting incoming and outgoing pairs of wires of a telecommunications cable, said connector comprising: a connector body (3) consisting of a cover portion (1) and a bottom portion (2), there being fixedly mounted in said bottom portion (2) at least one solderless, non-screwed, strip-free terminal element (5) for the termination of a pair of wires (4), said terminal element comprising contact arms (5*a*) and a resilient tab (7) integrally formed therewith, said tab having a crimped portion (6) at the distal end thereof adapted to engagingly receive a test prod, said contact arms (5*a*) of said terminal element (5) being positioned at an angle of 45 degrees relative to the axis of the connecting wires; said bottom portion (2) comprises tubular guide means (8) or channel-like guide means (8*a*) to receive and clamping ribs (9) at the inner ends of said guide means to retain in position the incoming and outgoing pair of cable wires; a cutting blade (10) for separating the cable ends is inserted in said bottom portion (2); said cover portion (1) furthermore comprises an aperture (11) adapted to receive a test prod (12) said aperture being positioned so that upon insertion, the test prod displaces and engages said resiliently oriented crimped portion of said tab for external connection to said terminal element.

4,452,503
CONNECTOR FOR SEMIRIGID COAXIAL CABLE

Edgar W. Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 222,188, Jan. 2, 1981, abandoned. This application Jun. 10, 1983, Ser. No. 502,349

Int. Cl.³ H01R *17/00*

U.S. Cl. 339—177 R **19 Claims**

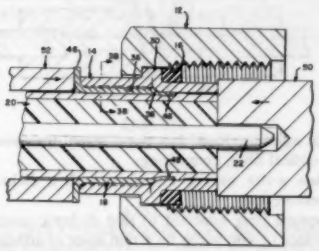
1. An electrical connector plug for terminating semirigid coaxial cable, comprising:

center contact means in electrical engagement with a center conductor of said cable;

a bored tubular shell member having rearward bore means of relatively large inner diameter inwardly contoured toward forward bore means having a relatively smaller inner diameter dimensioned to receive said cable and said contact means therethrough;

external coupling means engaging said tubular member;

bored gripping means having a rearward collar portion dimensioned to closely receive said cable therethrough, and having a plurality of spline fingers extending forward from the periphery of said collar portion defining therebetween a profiled opening of a dimension substantially equal to said cable diameter, and said gripping means being rearwardly disposed of said tubular member, whereby,



upon moving said gripping means forwardly into said rearward bore means, said spline fingers are resiliently deflected inwardly along said contour to embed into an outer conductive layer of said cable, said tubular shell member having longitudinal grooves within rearward walls defining said rearward bore means, said grooves engaging said gripping means collar portion for resisting rotational motion of said gripping means within said tubular shell member.

4,452,504
CROSS CONNECTION LINK FOR ESTABLISHING THE SAME PHASE BETWEEN ELECTRICAL TERMINAL BLOCKS

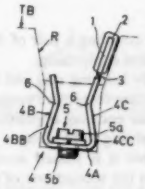
Horst Conrad; Wolfgang Kretzschmar, and Peter E. Murray, all of Detmold, Fed. Rep. of Germany, assignors to C. A. Weidmüller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 333,112

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048497

Int. Cl.³ H01R *13/02*

U.S. Cl. 339—263 R **33 Claims**



1. A cross connection link for establishing the same electrical phase between several terminal blocks having electric bars, comprising an elongated conductor; a plurality of distancing elements each having a leg integral with said conductor and a web inclined with reference to said leg and having an aperture; threaded fasteners, one for each of said distancing elements and each having a connecting portion extendable through the respective aperture and into meash with the electric bar of the respective terminal block; and means for confining each fastener in the region of the respective distancing element.

4,452,505

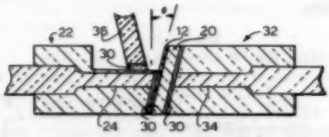
BIDIRECTIONAL COUPLER FOR COMMUNICATION OVER A SINGLE FIBER

George A. Gasparian, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 136,636, Apr. 2, 1980, abandoned. This application May 16, 1983, Ser. No. 494,135

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.15 13 Claims



1. An assembly for bidirectional signal transmission over a single optical fiber, comprising:

a glass wafer having a surface with a dichroic coating thereon; and

an optical fiber attached to said dichroic coating on said surface of said wafer by a thin layer of adhesive.

4,452,506

COUPLING OF DIELECTRIC OPTICAL WAVEGUIDES

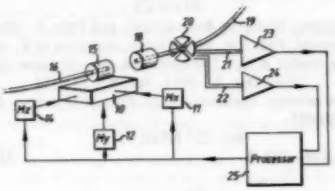
Michael H. Reeve, Ipswich; Colin A. Millar, Stowmarket, and David B. Payne, Wickham Market, all of England, assignors to Post Office, London, England

Filed Nov. 28, 1980, Ser. No. 211,049

Claims priority, application United Kingdom, Dec. 3, 1979, 7941618

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 10 Claims



9. Apparatus for coupling a pair of dielectric optical waveguides, said apparatus comprising:

means for initially locating one end of each of said pair of waveguides within respective coupling elements such that these waveguide ends are approximately aligned;

means for transmitting light along a first one of said waveguides such that it is passed across said approximately aligned ends to the second one of said waveguides;

means for independently sensing light emitted from said first waveguide but not coupled into said second waveguide at first and second positions spaced apart about said second waveguide;

means for comparing the relative magnitude of light sensed at said first and second positions to obtain an indication of the relative direction of any misalignment between said waveguide ends; and

means for automatically adjusting the relative position of said waveguides in accordance with the indicated direction of misalignment so as to minimize the non-coupled light sensed at said first and second positions.

4,452,507

FIBER OPTICAL BYPASS SWITCH

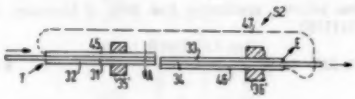
Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 17, 1981, Ser. No. 303,097

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036950

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 13 Claims



12. A fiber optical bypass switch for selectively connecting an incoming line fiber and an outgoing line fiber to a pair of subscriber fibers extending to a subscriber station and bypassing the subscriber station by interconnecting the incoming line fiber to the outgoing line fiber by movement of a single part, said bypass switch comprising a housing having spaced first and second stops; a fiber loop having two ends; means for holding three fibers on a movable part in said housing, said means positioning one line fiber, one subscriber fiber and one end of the fiber loop in a plane extending parallel to a direction of movement of said part, said movable part being mounted in the housing with an end of the part being movable between the stops in a contact-free manner, means for mounting the three fibers in the housing in the desired position relative to the stops; and means for moving the part between said stops, said means for moving including means for biasing the part in one direction between said stops, and said means for mounting the three fibers in the housing positioning a line fiber, a subscriber fiber and the other end of the fiber loop in the same plane between said stops with the other end of the fiber loop and the line and subscriber fibers being arranged so that when the movable part engages the first stop, the line fibers are connected together with the ends of the fiber loop being coupled to the subscriber fibers to return any light signals contained in the subscriber fibers back to the subscriber station and when the movable part engages the second stop, the line fiber on the movable part is coupled to the subscriber fiber mounted in the housing, the subscriber fiber on the movable part is coupled to the line fiber mounted on the housing and the ends of the fiber loop are not coupled with another fiber.

4,452,508

GRADED INDEX OPTICAL FIBRES

Keith J. Beales; William J. Duncan, both of Ipswich; Anthony G. Dunn, Woodbridge, and George R. Newns, Hintlesham, all of England, assignors to British Telecommunications, London, England

Continuation of Ser. No. 112,702, Jan. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 105,652, Dec. 20, 1979, Pat. No. 4,275,951, which is a continuation of Ser. No. 919,238, Jun. 26, 1978, abandoned. This application Aug. 12, 1983, Ser. No. 522,527

Claims priority, application United Kingdom, Jun. 28, 1977, 26924/77; Apr. 19, 1979, 7912650; Apr. 19, 1979, 7912651

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ C03C 3/08, 13/00; G02B 5/14

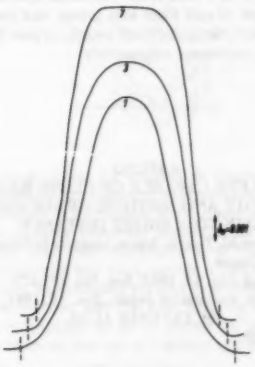
U.S. Cl. 350—96.31 10 Claims

1. A graded index glass optical fibre having a total insertion loss of less than 20 dB/km and having a core and a cladding, said core being formed from a first glass consisting of

silica,

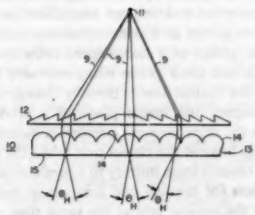
boric oxide,

one alkali metal oxide selected from the group consisting of sodium oxide and potassium oxide,
one alkaline earth metal oxide selected from the group consisting of calcium oxide, strontium oxide and barium oxide, and optionally,
up to about 5 mole percent of one or more compatible oxides, said compatible oxides not including an alkali metal oxide,
and said cladding being formed from a second glass having a refractive index at least 1% lower than that of said first glass and consisting of
silica,
boric oxide,
the same alkali metal oxide as in said first glass, and optionally,



up to about 5 mole percent of one or more other compatible oxides, said other compatible oxides not including calcium, strontium oxide or barium oxide or an alkali metal oxide,
said first and second glass compositions being selected to exclude compositions which undergo phase separation or devitrification during optical fibre production, and said gradation of refractive index being produced by thermal diffusion between said first and second glasses and being at least partly caused by a composition gradient of alkaline earth metal oxide: said graded index optical fibre being characterised in that the mole percentage of the alkali metal oxide in said first glass is substantially equal to or greater than the mole percentage of the alkali metal oxide in said second glass.

4,452,509
PROJECTION TELEVISION SCREEN HAVING A SELECTED AUDIENCE ENVELOPE
Bertram VanBreemen, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 28, 1982, Ser. No. 372,810
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—128 **9 Claims**

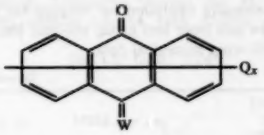


1. A screen for a rear projection television receiver for projecting an image originating from an image source on one side of said screen to a viewer on the other side of said screen, said screen comprising:
field lens means for substantially collimating the light from said image source;
focusing lens means for focusing the light from said field lens means for forming a viewable image on an image surface of said screen; and
diffusion means located adjacent to said focusing lens means for forming a vertical audience envelope;
wherein said field lens is disposed with respect to said focusing lens such that the light ray that passes through the center of said field lens means forms a nonzero angle with respect to a horizontal plane aligned with the horizontal centerline of said image surface such that said vertical audience envelope is asymmetrical about said horizontal plane.

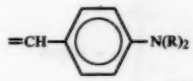
4,452,510
Patent Not Issued For This Number

4,452,511
SUBSTITUTED ANTHRACENE-TYPE ISOTROPIC DYES FOR LIQUID CRYSTAL DISPLAY DEVICES
William A. Huffman, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 30, 1982, Ser. No. 454,706
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—346 **12 Claims**

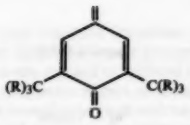
1. A composition of matter comprising a nematic, smectic or cholesteric liquid crystal material, at least one dichroic dyestuff, and an isotropic dyestuff having the general formula



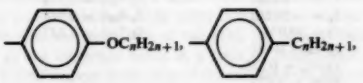
wherein W is selected from the group consisting of



and



wherein:
R is independently selected from the group consisting of H and C_nH_{2n+1};
Q is indepedently selected from the group consisting of H, OH, NH_2, CN, OC_nH_{2n+1}, NO_2, C_nH_{2n+1},



F, Cl, Br, SH, CHO and CF_3;
x is 1 to 8; and
n is 0 to about 20,

wherein said isotropic dyestuff has an optical order parameter of about 0.

4,452,512

WIDE ANGLE ZOOM LENS SYSTEM

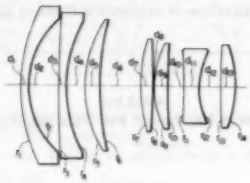
Hiroshi Takase, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 187,448, Sep. 15, 1980, abandoned. This application Jun. 20, 1983, Ser. No. 505,891

Claims priority, application Japan, Sep. 18, 1979, 54-119830

Int. Cl.³ G02B *13/04*

U.S. Cl. 350—426 **6 Claims**



1. A wide-angle zoom lens system comprising a front lens group consisting of a first negative lens component having a surface with a small radius of curvature on the image side, a second negative lens component and a third positive lens component, and a rear lens group consisting of a fourth positive lens component, a fifth positive lens component having a surface with a small radius of curvature on the object side, a sixth negative lens component having a surface with a small radius of curvature on the image side and a seventh positive lens component, said zoom lens system being so adapted as to perform the zooming operation by varying the airspace reserved between said front lens group and rear lens group, and having the following numerical data:

$r_1 = 42.3913$		
$d_1 = 2.090$	$n_1 = 1.63854$	$\nu_1 = 55.4$
$r_2 = 23.5091$		
$d_2 = 8.100$		
$r_3 = 442.1958$		
$d_3 = 1.990$	$n_2 = 1.63854$	$\nu_2 = 55.4$
$r_4 = 34.7672$		
$d_4 = 4.479$		
$r_5 = 32.2910$		
$d_5 = 4.280$	$n_3 = 1.68893$	$\nu_3 = 31.1$
$r_6 = 73.6646$		
$d_6 = 36.741 \sim 0.550$		
$r_7 = 41.0666$		
$d_7 = 3.380$	$n_4 = 1.65160$	$\nu_4 = 58.7$
$r_8 = -186.3587$		
$d_8 = 0.150$		
$r_9 = 24.5146$		
$d_9 = 3.590$	$n_5 = 1.65830$	$\nu_5 = 57.3$
$r_{10} = 146.4997$		
$d_{10} = 4.207$		
$r_{11} = -86.5398$		
$d_{11} = 4.147$	$n_6 = 1.80518$	$\nu_6 = 25.4$
$r_{12} = 20.7628$		
$d_{12} = 5.332$		
$r_{13} = 246.8300$		
$d_{13} = 3.443$	$n_7 = 1.63980$	$\nu_7 = 34.5$
$r_{14} = -30.4106$		
$f = 36.0 \sim 68.5$		
$f_M = -64.742$		
$f_1 = -86.381$	$\lvert f_1/f_M \rvert = 1.334$	
$f_2 = -59.207$	$\lvert f_2/f_M \rvert = 0.914$	
$f_3 = 80.074$	$\lvert f_3/f_M \rvert = 1.237$	
$r_9/f_w = 0.681$		
$r_{12}/f_w = 0.578$		
$r_7/r_9 = 1.675$		
$f_6 = 42.415$,	$f_4 = 51.948$,	$f_5 = 44.207$
$f_7 = 42.524$,	$f_{45} = 24.238$,	$f_5/f_4 = 0.851$
$f_{45}/f_7 = 0.570$,	$f_7/f_w = 1.003$,	$f_1/f_w = 1.178$

-continued

$r_4/f_w = 0.966$,	$r_5/f_w = 0.897$, $(d_{10} + d_{12})/f_w = 0.265$	$d_4/f_w = 0.124$

wherein the reference symbols r_1 through r_{14} represent radii of curvature on the surfaces of the respective lens elements, the reference symbols d_1 through d_{13} designate thicknesses of the respective lens elements and airspaces reserved therebetween, the reference symbols n_1 through n_7 denote refractive indices of the respective lens elements, the reference symbols ν_1 through ν_7 represent Abbe's numbers of the respective lens elements, the reference symbol f designates focal length of the zoom lens system as a whole, the reference symbol f_m represents focal length of said front lens group, and the reference symbols f_1, f_2 and f_3 designate focal lengths of said first, second and third lens components respectively.

4,452,513

ZOOM LENS CAPABLE OF CLOSE RANGE PHOTOGRAPHY AND METHOD OF FOCUSING THE SAME TO A SHORT DISTANCE

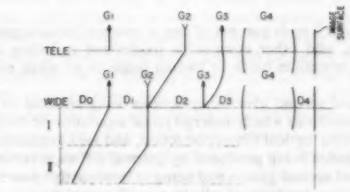
Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

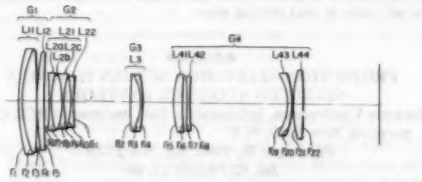
Filed Jun. 11, 1982, Ser. No. 387,677

Claims priority, application Japan, Jun. 19, 1981, 56-93728

Int. Cl.³ G02B *15/10*

U.S. Cl. 350—428 **10 Claims**





1. An improved zoom lens having, in succession from the object side, a first lens group as a convergent focusing group, a second lens group as a divergent magnification changing group, a third lens group as a convergent correcting group, and a fourth lens group as a convergent relay system, said second group and said third group being movable relative to each other along the optical axis to thereby change the magnification while keeping the image plane at a predetermined position, wherein the improvement comprises means for moving said first group toward the object side when the said zoom lens is focused to objects from infinity to a predetermined short distance, and means for moving said first group and said second group along the optical axis at the same time while said third group is maintained at a predetermined position relative to the image plane when said zoom lens is focused to an object at a distance shorter than said predetermined short distance.

4,452,514
OPTICAL DEVICE FOR IMAGING AN INTERIOR OF AN EYE

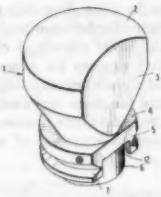
Manfred Spitznas, Bonn, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 365,091

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 8109993[U]

Int. Cl.³ A61B *3/10, 3/14*

U.S. Cl. 351—206 **17 Claims**



1. An optical device for imaging an interior of an eye, the device including a front element which acts as an objective and which is adapted to be brought in proximity to the eye, a field lens, and a common mounting means for mounting the front element and field lens, characterized in that the mounting means and the field lens each include a flattened surface portion extending substantially parallel to a common optical axis of the front element and the field lens, the flattened surface portions are disposed so as to permit an introduction of a surgical instrument into the eye during eye surgery.

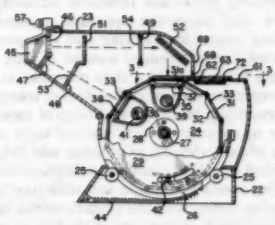
4,452,515
EYE TESTING DEVICE

Walter M. Lewis, Provo, Utah, assignor to Stereo Optical Company, Inc., Chicago, Ill.

Filed Jan. 27, 1982, Ser. No. 343,275

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—243 **13 Claims**



1. In a vision testing apparatus including: a base, a light-occluding casing carried by said base;

a drum member rotatably supported in said casing, means for rotating said drum member, said drum member having a periphery, said drum member having a vision test station disposed along said periphery of the drum member;

an internal test pattern carried by said drum member in position to be selectively moved into alignment with the vision test station, said internal test pattern having a plurality of characters;

viewing means carried by said casing including lens means adapted for optical alignment with said internal test pattern, the improvement comprising:

a stage member external to said casing;

an external test pattern, said external test pattern being supported by said stage member and having characters that are substantially identical to the internal test pattern characters;

a slot in said casing, said slot being between said stage member and said vision test station on said drum member;

remote designation means for simultaneously designating at least a certain one of the characters of said internal test pattern while simultaneously designating at least a certain one of the characters of said external test pattern, said certain character of the internal test pattern being the same as said certain character of the external test pattern; and

said remote designation means includes a mask member overlying at least a portion of said stage member and at least a portion of said vision test station, said mask member having a one area and another area for simultaneously designating said certain character of the internal test pattern and said certain character of the external test pattern while simultaneously occluding portions of the internal and external test patterns other than said certain character.

4,452,516
OPTICAL GRID

Miguel Salia-Munoz, 7a Privada de Azafran No. 14 Col., Granjas, Mexico

Filed Jan. 20, 1982, Ser. No. 341,019

Claims priority, application Mexico, Jan. 23, 1981, 185667; Apr. 14, 1981, 186874; Apr. 14, 1981, 186875; Apr. 23, 1981, 186995

Int. Cl.³ G02C *7/16*

U.S. Cl. 351—45 **10 Claims**

1. An optical grid useful for correcting optical aberrations, with an increased capacity of image perception and adapted to be applied both to the eye and to artificial lenses, which essentially comprises two series of bars of triangular cross section, arranged parallel to each other and with each series perpendicularly arranged with respect to the other series in order to form a grid leaving square free spaces therein, the apexes of said bars being directed toward the outer face of the grid, on which the light falls and the bases of said bars being directed towards the inner face of the grid which is directly confronted to the lens which defects are desired to correct, said square free spaces constituting openings of a square frustopyramidal shape, the larger base of which is at the outer face and the smaller base of which is at the inner face of the grid, the area of said larger base of the openings being in a ratio of from about 36:1 to 2.25:1 with respect to the area of the smaller base, the total area of the smaller base of each one of said square openings being of from about 0.04 to about 4 mm^2, and the width of said bars being of about 1 mm.

4,452,517

FOCUSING SYSTEM FOR EYE-GROUND CAMERA

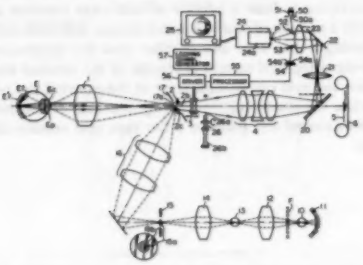
Yoshimi Kohayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 109,275, Jan. 3, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,870

Claims priority, application Japan, Jan. 16, 1979, 54-3734; Jan. 19, 1979, 54-5177

Int. Cl.³ A61B *3/14*; G03B *29/00*

U.S. Cl. 351—206 **29 Claims**



1. An eye examining instrument comprising:

a photographing system comprising objective means mounted to face an eye to be examined, an aperture stop, movable lens means, fixed lens means and image detecting means in succession;

an illumination system coupled to said photographing system for illuminating the ground of said eye;

an observing system coupled to said photographing system for observing said ground of said eye;

reflection means positioned on the image side of said objective means for transmitting a light beam to said ground of said eye for observation;

photosensing means for generating an output signal related to the position of a light beam incident thereon relative to an expected positioned;

a light receiving system for directing a light beam transmitted from said reflection means and reflected from said ground of said eye onto said photosensing means;

said movable lens being movable to simultaneously focus the image of a portion of said eye on said image detecting means and to focus said light beam, directed by said light receiving system, on said expected position of said photosensing means; and

drive means for displacing said movable lens means in response to the output signal generated by said photosensing means until said image is focused on said image detecting means.

4,452,518

SLIDE PROJECTOR CONTROL APPARATUS

Dominic J. Di Gianfilippo, Mount Prospect, and Robert R. Parker, Wheeling, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1981, Ser. No. 336,522

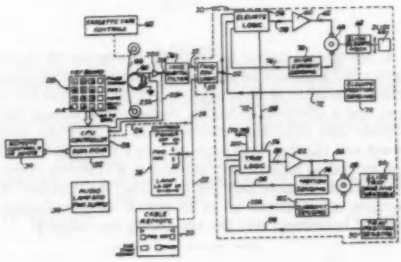
Int. Cl.³ G03B *23/06, 23/02*

U.S. Cl. 353—25 **19 Claims**

1. Slide projector control apparatus comprising:

manually operable means for entering slide address codes, defined function codes and predetermined mode command codes, said manually operable means including a plurality of entry devices, a first plurality of said entry devices corresponding to defined functions for entry of said defined function codes, each of a second plurality of said entry devices representing a respective one of the numerals 0 through 9, said slide address codes and said mode command codes being entered on said second pluralsity of entry devices as numerical codes, said address codes being entered on said manually operable means by the codes 1 through N and said predetermined mode command codes being entered as predetermined numerical codes greater than N, where N is equal to the number of slide positions in a slide tray to be carried;

control means responsive to operation of said manually operable means for generating predetermined control signals in response to said entered predetermined mode command codes, slide address codes and defined function codes, said control means comprising means responsive to entry of said slide address codes on said second plurality of entry devices for generating slide tray transport signals, said control means further comprising means responsive to entry of said mode command codes on said second plurality of entry devices for generating predetermined mode command signals representing corresponding slide projector control functions and modes different than said defined functions, said control means further comprising means responsive to actuation of said first plurality of



defined function entry devices for generating corresponding predetermined defined function signals representing corresponding slide projector functions and modes; and

projection apparatus means responsive to said slide tray transport signals, said mode command signals and said defined function signals for controlling predetermined corresponding projection functions including slide tray transport, said projection apparatus controlling means comprising means for carrying and transporting a slide tray having a predetermined number of slide positions N and means for projecting a slide presented at a predetermined projection station, said slide tray transport control signal generating means of said control means being responsive to an entered slide address code on said first plurality of entry devices to generate said slide tray transport control signals to condition said projection apparatus controlling means to position said slide tray carrying and transporting means with the predetermined slide position at said projection station corresponding to said entered slide address code.

4,452,519

FOLDING CAMERA HAVING ERECTABLE LIGHT SOURCE

Richard J. Fraser, Franklin; Robert S. Pesce, Woburn, and Donato F. Pizzuti, Lynnfield, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1982, Ser. No. 450,282

Int. Cl.³ G03B *17/04, 13/02*

U.S. Cl. 354—126 **12 Claims**

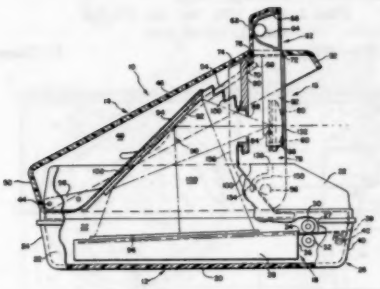
1. A folding camera comprising:

a first housing having first and second ends, said first housing being adapted to support a film cassette in position for the exposure of a length of film contained therein;

a second housing pivotally mounted adjacent said first end of said first housing;

a third housing having one end thereof pivotally coupled to said first housing near said second end of said first hous-

ing, said third housing further includes a second end which is pivotally coupled to a second end of said second housing thereby enabling movement of said first, second and third housings between a folded, compact, inoperative position and an extended, operative position wherein light may be directed toward said first housing so as to photographically expose the length of film; and



a source of artificial illumination coupled to said third housing for movement between a retracted inoperative position, when said first, second and third housings are out of said extended operative position, and an erected operative position in which it cooperates with said second end of said second housing to releasably lock said first, second and third housings in said extended operative position.

4,452,520

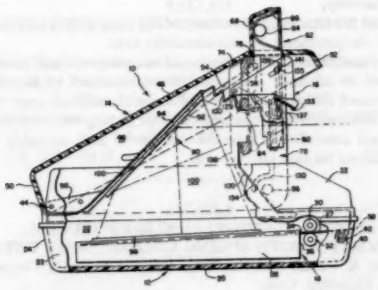
LEVER FOR FOLDING A CAMERA HAVING A RETRACTABLE LIGHT SOURCE

Jonathan I. Kaplan, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1982, Ser. No. 450,284

Int. Cl.³ G03B *17/04, 13/02*

U.S. Cl. 354—126 **4 Claims**



1. A folding camera comprising: a first housing having first and second ends, said first

housing being adapted to support a film cassette in position for the exposure of a length of film contained therein;

a second housing pivotally mounted adjacent said first end of said first housing;

a third housing having one end thereof pivotally coupled to said first housing near said second end of said first housing, said third housing further includes a second end which is pivotally coupled to a second end of said second housing thereby enabling movement of said first, second and third housings between a folded, compact, inoperative position and an extended, operative position wherein light may be directed toward said first housing so as to photographically expose the length of film;

a source of artificial illumination coupled to said third housing for movement between a retracted inoperative position, when said first, second and third housings are out of said extended operative position, and an erected operative position in which it cooperates with said second end of said second housing to releasably lock said first, second and third housings in said extended operative position; and

a manually operable lever coupled to said third housing and to said source of artificial illumination for movement between first and second positions, movement of said lever from said first position to said second position being effective to move said source of artificial illumination from said erected operative position to said retracted position and continued application of force to said lever when in said second position being effective to rotate said second and third housings in opposite directions into said folded position.

4,452,521

CAMERA HAVING AN ELECTROMAGNETICALLY DRIVEN SHUTTER

Michio Hirohata, and Hideo Ikari, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

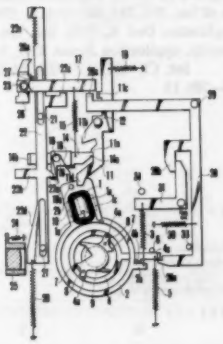
Filed May 25, 1982, Ser. No. 381,785

Claims priority, application Japan, Jun. 2, 1981, 56-85421; Jun. 2, 1981, 56-85422; Jun. 15, 1981, 56-91877

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—195.1 **5 Claims**



1. A camera with an electromagnetically driven shutter, comprising:

a plurality of shutter blades;

a rotatable shutter blades driving member to open and close said shutter blades;

a shutter opening spring to operate said shutter blades driving member from a shutter closing position to a direction to open the shutter;

an electromagnetic driving source having a movable member, said movable member being structured as a rotor rotatable coaxially with said shutter blades driving member and having a coil to effect rotation thereof towards a direction to open the shutter at the time power is supplied to said coil; and

a return spring to retain the shutter blade driving member at a shutter closing position through said movable member when power is not supplied to said electromagnetic driving source;

wherein said shutter blades driving member operates in a direction to open said shutter by the force of said shutter opening spring independently of the movable member

when power is supplied to the electromagnetic driving source; and

wherein said movable member of the electromagnetic driving source charges the return spring by its movement at a time power is supplied to the electromagnetic driving source and returns to a shutter closing position by the force of said return spring driving the shutter blade driving member along therewith when the power supply is stopped, said shutter opening spring being charged at that time.

2. A camera according to claim 1, which further comprises:

an automatic focusing mechanism;

a control member provided at said movable member for controlling operation of said automatic focusing mechanism; and

blocking means for blocking operation of said shutter blade driving member;

said movable member being operable to rotate through a specific angular distance when current is first supplied to said coil so as to start operation of said automatic focusing mechanism by means of said control member;

said blocking means operating to block operation of said shutter blades driving member during operation of said automatic focusing mechanism, said movable member being rotated through an angular distance equal to said specific angular distance when current is subsequently supplied to operate said shutter blades driving member.

4,452,522

LIQUID CRYSTAL DISPLAY DEVICE FOR CAMERA

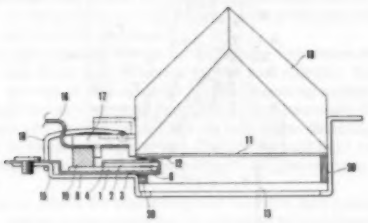
Hiroyasu Murakami, Tokyo; Takashi Uchiyama; Ryoichi Suzuki, both of Kanagawa; Shinji Sakai, Tokyo; Masaharu Kawamura, and Kikuo Momiyama, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 194,445, Oct. 6, 1980, abandoned. This application Dec. 4, 1981, Ser. No. 327,617

Claims priority, application Japan, Oct. 9, 1979, 54-130272

Int. Cl.³ G03B *17/18, 13/02*

U.S. Cl. 354—289.12 **2 Claims**



1. A liquid crystal display device for displaying photographic information together with an object image within a generally rectangular photographing view field provided by view finder optics in a camera, comprising:

display means including liquid crystal material for displaying photographic information;

holding means for holding a pentagonal prism of the camera, said display means being attached to said holding means;

mask means provided between the pentagonal prism and the display means, said mask means including a first transparent part facing a display part of the display means, a second transparent part facing the object image, and a light shading part provided between the first and the second transparent parts to shade an end part of the display means from light;

connector means for supplying power to the display means, said connector means being formed of a connector rubber;

presser means formed to apply a holding force to the connector means when said presser means is urged toward the pentagonal prism and the holding means; and

spring means for urging the connector means against the display means through the presser means, said spring means being supported on the holding means.

4,452,523

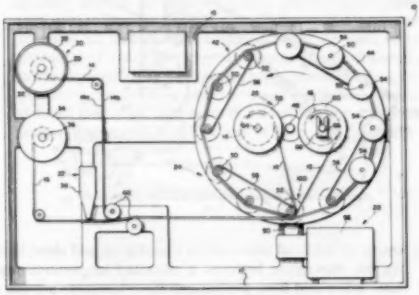
METHOD OF AND APPARATUS FOR PROCESSING FILM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 24, 1982, Ser. No. 391,703

Int. Cl.³ G03B *5/06*

U.S. Cl. 354—303 **14 Claims**



1. Compact apparatus for treating an elongated strip of material, said apparatus comprising:

means including a rotatable assembly of a given size mounted for rotation on a given axis, the perimeter of said assembly being configured for supporting the strip of material and including means providing access of a leading portion of the strip to an interior portion defined by said assembly;

a take-up reel of a size comparatively smaller than said given size and being mounted for rotation in the interior of said assembly, said take-up reel being configured for attachment to the leading end portion of the strip thereto;

means for guiding said strip to the perimeter of said rotatable assembly;

means for treating one surface of the strip as it is advanced to the perimeter of said assembly; and,

drive means for rotating both said assembly and said take-up reel to advance a number of convolutions of the strip around the perimeter of said assembly and advance successive sections of the treated strip starting with the innermost convolution into the interior of said assembly for take-up by said take-up reel.

4,452,524

ELECTROSTATOGRAPHIC REPRODUCING APPARATUS WITH SPRING LOADED PAPER PATH

Michael A. Parisi, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1982, Ser. No. 393,900

Int. Cl.³ G03G *15/20*

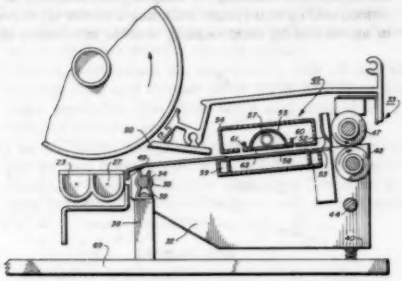
U.S. Cl. 355—3 FU **21 Claims**

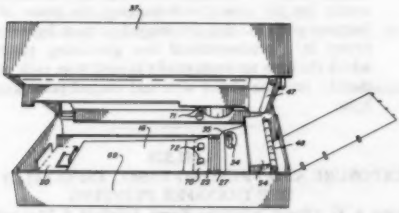
1. An electrostatographic reproducing apparatus comprising first, second frame portions and a third base frame portion said first frame portion and said second frame portion being oriented relative to each other to define at least in part a copy sheet transport path, said second frame portion being pivotally mounted to said third base frame portion about an axis perpendicular to the copy sheet transport path to move toward and away from said first frame portion to provide open and closed positions with respect to said first frame portion,

said first frame portion including at least one positively driven fixed sheet transport roll,

said second frame portion including at least one idler nip roll

positioned in said sheet transport path opposite said driven sheet transport roll in said first frame portion and including means to bias said second frame portion toward said first frame portion so that said idler nip roll in said second





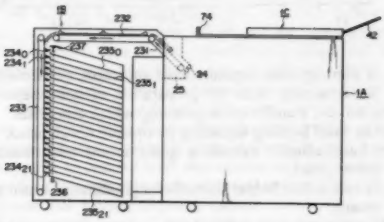
frame portion is directly biased into driving engagement with said driven sheet transport roll in said first frame portion to thereby self reference said second frame portion against said first frame portion.

4,452,525

DOCUMENT FEED CONTROL DURING COPY PAPER JAMS

Tomoki Ogura, Ayase, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1982, Ser. No. 395,308
Claims priority, application Japan, Jul. 8, 1981, 56-106506
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **5 Claims**



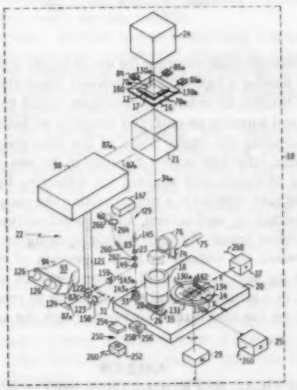
1. A copying apparatus comprising:
a document table set with a document;
document feeding and discharging means for automatically feeding said document to said document table and after copying, discharging said document from said document table to a collection area;
presetting means for presetting a copy number;
continuous copying means for continuously copying said document by the copy number and continuously generating the resulting copies;
sorting means for selectively sorting the copies from said continuous copying means to cause them to be received into a plurality of receiving sections;
abnormally detecting means for detecting the abnormalities occurring in a copy conveyor passage existing from said continuous copying means to said receiving sections of said sorting means; and
means for halting the copying operation of said continuous copying means and permitting said document set on said document table corresponding to a copy having been jammed to be automatically discharged by said document feeding and discharging means to said collection area in response to the detection of the abnormalities by said abnormality detecting means.

4,452,526

STEP-AND-REPEAT PROJECTION ALIGNMENT AND EXPOSURE SYSTEM WITH AUXILIARY OPTICAL UNIT

Karl-Heinz Johannsmeier, Los Altos, and Edward H. Phillips, Middletown, both of Calif., assignors to Optimetrix Corporation, Mountain View, Calif.

Continuation of Ser. No. 126,007, Feb. 29, 1980, abandoned.
This application Aug. 3, 1981, Ser. No. 289,790
Int. Cl.³ G03B *27/52, 27/70*
U.S. Cl. 355—43 **27 Claims**



1. Alignment apparatus for interchangeably aligning an object with respect to images of first and second elements, said apparatus comprising:
a first holder for holding the first element;
a first optical unit for producing an image of the first element at an image plane;
a second holder, spaced from the first holder, for holding the second element;
a second optical unit, spaced from the first optical unit, for producing an image of the second element at the image plane;
a third holder for holding the object;
a stage, movable along coordinate axes, for permitting relative movement between the object and both images of the first and second elements so that the object may be aligned with respect to the image of the first element and also with respect to the image of the second element; and
a reference indicium for providing an indication of the coordinate axes and for permitting direct alignment of the images of the first and second elements with respect to those coordinate axes and determination of the relative spacing between those images so that the object may be

interchangeably aligned with respect to the images of the first and second elements.

4,452,527

PHOTOGRAPHIC ENLARGER FOR USE IN BRIGHT LIGHT

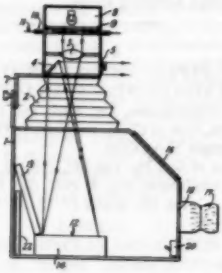
George F. A. M. Turner, Ingatestone, and Martin G. Hammond, Wickford, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 27, 1982, Ser. No. 436,907

Claims priority, application United Kingdom, Nov. 4, 1981, 8133196

Int. Cl.³ G03B *13/28*

U.S. Cl. 355—45 6 Claims



1. A photographic enlarger for use in bright light comprising a casing having a light-tightly enclosed space therein; a transparency holder; an enlarging objective means having an optical axis and forming an enlarged image in an image plane, said space including the image plane of the enlarging objective; a lenticulated reflecting screen disposed in the image plane of the enlarging objective and adapted for reflecting light rays incident from said objective; a mirror within the range of the light rays reflected by said screen; and a window-type opening in said enclosed space, through which opening said mirror deflects toward the outside at least a portion of the light rays reflected by said screen, said mirror being of such size and disposed in a position in said space such as to render an image focussed on the said screen visible through the said opening.

4,452,528

OPTICAL REPRODUCTION METHOD AND APPARATUS

Günter Rath, Goldbach, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 9, 1982, Ser. No. 356,439

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109597

Int. Cl.³ G03B *27/48, 27/50, 27/70*

U.S. Cl. 355—51 14 Claims

1. Method of illuminating an object particularly a flat sheet-like object placed in a copy machine with a line of light extending thereacross, and utilizing an essentially point-shaped source of light comprising the steps of

generating an at least approximate point source of light (1);

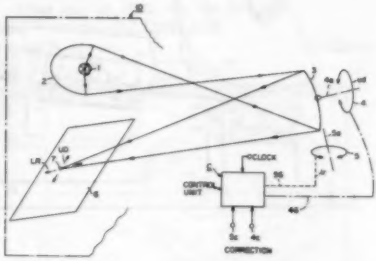
directing the light towards a mirror (3) and imaging the essentially point source of light, reflected from the mirror, on the object as an imaged light point;

and wobbling the mirror in an oscillating reciprocating manner about two orthogonal axes to deflect the imaged light point in a plurality of lines scanning across the object.

7. In an optical reproduction apparatus, particularly for use in a copy machine, means for uniformly illuminating an object (6), particularly a flat sheet-like object placed in the copy machine for optical reproduction comprising, in accordance with the invention,

an essentially point-shaped source of light (1);

an optical system (2, 3) imaging the point source of light on the object, and scanning the imaged point-source over the object, said optical system including a mirror (3) movable in an oscillating reciprocating wobble movement about



two orthogonal axes (4) deflecting the light from the source on the object and imaging the point of light thereon, while moving the imaged point of light over the object in a predetermined line generating pattern, in which the lines are sequentially spaced from each other to thereby scan the object with said imaged point-source of light.

4,452,529

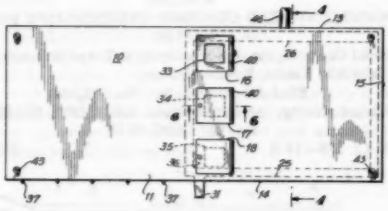
EXPOSURE AND PRINTING EASEL, ESPECIALLY FOR DYE TRANSFER PRINTING

John A. G. Olsson, c/o John Kousi, Fairfield & Maxwell, 277 Park Ave., New York, N.Y.

Continuation of Ser. No. 177,226, Aug. 11, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,484

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—72 8 Claims



1. A photographic exposure easel apparatus, particularly for use in connection with the preparation of color separation plates for dye transfer color printing, which comprises

(a) an easel housing including an opaque cover panel,

(b) longitudinally extending guide means underneath the cover panel,

(c) a matrix film holder slideable longitudinally on said guide means,

(d) said matrix film holder having a recess in its upper surface positioned directly underneath said opaque cover panel,

(e) three transversely spaced exposure openings in said opaque cover, each adapted to receive a separate color filter,

(f) a selectively operable opaque cover lid for each of said exposure openings, arranged for one-at-a-time opening to provide access to a selected exposure opening,

(g) manually engageable positioning means on said matrix

film holder enabling said holder to be moved manually from one exposure position to another,

(h) manually detectable index means associated with said positioning means to enable predetermined incremental indexing of said matrix film holder in total darkness,

(i) first spacer means supporting said easel housing to maintain said matrix film, when in said holder, at a predetermined elevation above a support surface,

(j) film support means on the opposite side of said easel housing from said opaque cover panel for supporting a color separation film sheet when said housing is in an inverted position, and

(k) second spacer means associated with the opaque cover side of said housing operative, when said housing is inverted, to support said color separation film sheet at the same predetermined elevation above said support surface.

4,452,530
COPYING APPARATUS EQUIPPED WITH AN ORIGINAL-SUPPORT DEVICE, AND AN ORIGINAL-HOLDING MECHANISM THEREFOR

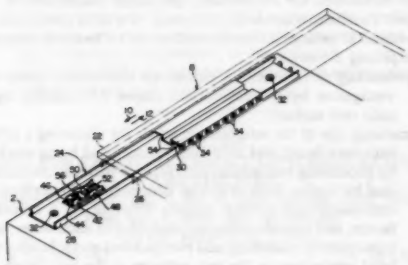
Shigeo Koyama, Toyonaka; Ryutaro Yamagata, Nishinomiya; Nobuhiko Kozuka, Suita, and Hiromi Sakato, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Aug. 14, 1981, Ser. No. 292,842

Claims priority, application Japan, Aug. 27, 1980, 55-120578[U]

Int. Cl.³ G03B 27/62

U.S. Cl. 355—75 **5 Claims**



1. In a copying apparatus of the type in which an original-support device is mounted reciprocably on a housing through a sliding mechanism, said original-support device in the apparatus quiescent condition being in a central stop position and on actuation of the apparatus moving in a first direction on said housing to a start-of-exposure position, then reversing movement and moving in a second direction to an end-of-exposure position, and then again reversing movement and moving in said first direction back to said central stop position, said sliding mechanism being comprised of an outside rail fixed to one of said original-support devices and said housing, an inside rail fixed to the other of said original-support device and said housing, a holding plate disposed between said outside rail and said inside rail, and a plurality of balls rotatably held by said holding plate to contact both said outside rail and said inside rail, each of the opposite ends of one of said outside rail and said inside rail having disposed thereat a stop face against which the opposite ends of said holding plate can respectively abut, and one end portion of the other of said outside rail and said inside rail having disposed thereat a stop face against which one end of said holding plate can abut to prevent said original-support device from moving off said housing in one of said first direction and said second direction; the improvement comprising a stop member detachably disposed at the other end of the other of said outside rail and said inside rail to define a stop face against which the other end of the holding plate can abut to prevent said original-support device from moving off said housing in the other of said first direction and said second direction.

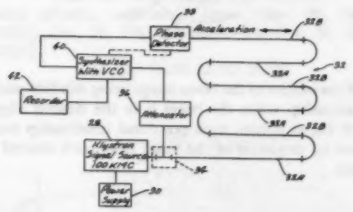
4,452,531
METHOD AND MEANS OF DETERMINING ACCELERATION

Herman R. Person, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed Oct. 5, 1979, Ser. No. 82,001

Int. Cl.³ G01P 15/00, 15/08, 3/36, 3/42

U.S. Cl. 356—28.5 **7 Claims**



1. The combination of an accelerometer and a vehicle, comprising:

a vehicle,

a wave frequency emitter means comprising a noise source and a tuned cavity on said vehicle,

a wave frequency receiver means comprising a noise detector apparatus on said vehicle and adapted to detect from one direction the wave frequency emitted by said wave frequency emitter means and in spaced relation to said wave frequency emitter means,

means on said vehicle comprising first dielectric wave guides which communicate between said tuned cavity wave frequency emitter means and said wave frequency receiver means and are adapted to present substantially directly to said wave frequency receiver means a wave frequency substantially identical to the wave frequency of said wave frequency emitter means at the time of emission therefrom,

second dielectric wave guides also communicating between said tuned cavity wave frequency emitter means and said wave frequency receiver means and adapted to provide a much slower velocity of propogation of the energy of the emitted wave frequency than that of said first dielectric wave guides, and

means on said vehicle adapted to register the difference between the wave frequency presented substantially directly to said wave frequency receiver means and the wave frequency emitted from said wave frequency emitter means and transmitted through said first and second wave guides as detected by said wave frequency receiver means; and wave frequency difference being proportional to the acceleration of said vehicle.

4,452,532
BEAM ALIGNMENT TOOL AND METHOD

Everett C. Grollimund, Midlothian, and Peter Martin, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 18, 1980, Ser. No. 160,625

Int. Cl.³ G01B 11/26

U.S. Cl. 356—121 **17 Claims**

1. A tool for checking alignment between a beam of radiant energy and a structure comprising:

(a) target support means for holding a target in the path of the beam so that the beam will impinge on a surface of the target and thereby form a beam image;

(b) a reticle opaque to the radiant energy of the beam; and

(c) reticle positioning means for holding the reticle in the path of the beam in front of the target in predetermined alignment with the structure so that the reticle will cast a shadow on the target within the beam image, the shadow

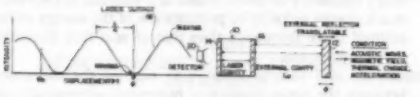
and the outline of the beam image being in a first positional relationship when the beam is in the desired alignment with the structure, such positional relationship being altered by deviation of the beam from such desired alignment.

4,452,533

EXTERNAL CAVITY DIODE LASER SENSOR

Ronald O. Miles, Washington, D.C.; Thomas G. Giallorenzi, Springfield, Va., and Alan B. Tveten, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 22, 1981, Ser. No. 286,099
Int. Cl.³ G01B 9/02
U.S. Cl. 356—352 **11 Claims**



1. A sensor for sensing a change in environmental condition comprising:

a diode laser having radiation output from opposite facets defined by partially reflective mirrors;

an external reflector means spaced from one facet for defining an external cavity therebetween, said external reflector means reflecting the radiation output back to the laser and wherein said external reflector means changes in position relative to the one facet in response to a change in environmental conditions, the external reflector means being carried by a cantilever-mounted member adapted for exposure to environmental condition;

a photodetector spaced from the other facet for detecting laser output intensity;

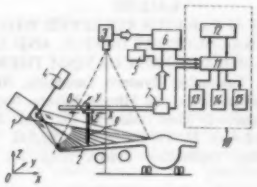
whereby position changes of the external reflector means cause phase shifts in light reflected back to the laser facets which affects reflectance of the partially reflective mirrors to cause a change in laser output intensity which is detected by said photodetector, thereby indicating a change in environmental conditions.

4,452,534

METHOD OF DETERMINING GEOMETRIC PARAMETERS OF OBJECT'S SURFACE AND DEVICE THEREFOR

Dmitry D. Gribanov, ulitsa Chusovskaya, 11, korpus 6, kv. 35, Moscow; Vladimir P. Kulesh, ulitsa Stroitelnaya, 6, kv. 29, Zhukovsky Moskovskoi oblasti; Appolinary K. Martynov, 3 Frunzenskaya ulitsa, 3, kv. 40, Moscow; Anatoly A. Orlov, Naberezhnaya Tsialkovskogo, 22, kv. 82; Tatyana G. Semikova, ulitsa Mayakovskogo, 17, kv. 37, both of Zhukovsky, Moskovskoi oblasti; Sergei D. Fonov, Balashikhinsky raion, poselok Zarya, 180, kv. 52, Moskovskaya oblast, and Leonid M. Moskalik, ulitsa Molodezhnaya, 13, kv. 177, Zhukovsky, Moskovskoi oblasti, all of U.S.S.R.

Filed Sep. 1, 1981, Ser. No. 298,479
Int. Cl.³ G01B 9/02
U.S. Cl. 356—359 **5 Claims**



1. A method for determining geometric parameters of an object's surface, wherein an increment of a third coordinate is measured at each point on the surface set by two coordinates, comprising the steps of:

producing an interference pattern on the surface under investigation by projecting two beams of coherent light onto said surface;

marking one of the interference bands for obtaining a reference zero band, said zero interference band being marked by producing two similar interference patterns characterized by similar form of spatial distribution of interference extremums and having periods differing by a constant factor, said periods being not multiples of each other, and subsequently recording said two patterns and selecting the band coincident on the two patterns as the zero band;

determining the attitude of an interference extremum surface corresponding to the marked zero band;

measuring the spatial distribution of a period of surfaces of all interference extremums along axis of said third coordinate;

recording said interference pattern;

determining an increment of the third coordinate with respect to the surface of said zero band at desired points having two preset coordinates by adding up periods of extremum surfaces of respective bands disposed between the zero band and the desired points.

4,452,535

CONCRETE PRODUCTION APPARATUS

Samuel I. Reid, 210 Admiral Cir., Laurenceburg, Laurence Co., Tenn. 38464

Filed May 13, 1982, Ser. No. 377,870
Int. Cl.³ B01F 15/06
U.S. Cl. 366—22 **10 Claims**

1. A concrete production apparatus for producing a concrete mix within a selected temperature range from cement, agggregate and concrete water oomprising:

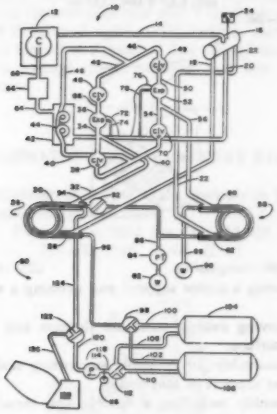
a well drilled into the earth to a ground water table;

a pump for pumping ground water from said well for use in the concrete production apparatus;

heat exchange means for receiving and circulating ground water from said pump;

a water circulation system for circulating concrete water

through said heat exchange means, said heat exchange means being operable to transfer heat between the concrete water and the ground water to temperature condition the concrete water to a predetermined temperature; and,



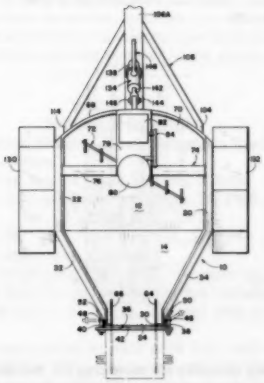
means for mixing the concrete water at the predetermined temperature with the cement and aggregate to produce a concrete mix within the selected temperature range, the predetermined temperature of the concrete water being selected to bring the cement and aggregate temperature to within the selected temperature range.

4,452,536

CART FOR RELATIVELY SMALL CONCRETE BATCHES AND THE LIKE

Edward G. Hinkle, Rte. 4, Box 6, Sand Springs, Okla. 74063

Filed Apr. 8, 1982, Ser. No. 366,461
Int. Cl.³ B01F *7/18, 15/02*
U.S. Cl. 366—47 **15 Claims**



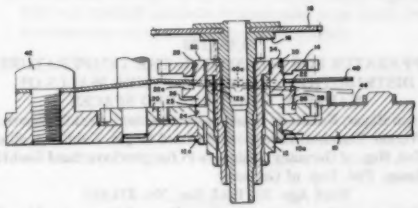
3. In combination with a wheeled trailer, a cart pivotally secured to the trailer for pivoting in alternate rearward and forward directions to provide a transporting position and materials discharging position for the cart, a material receiving reservoir provided in the cart, chute-like means providing communication between the reservoir and the exterior of the cart for facilitating discharge of the materials therefrom, agitator means disposed within the reservoir for continuous stirring of the materials during transporting thereof in the cart, and including fluid cylinder means pivotally secured to the trailer, rack and gear means secured between the cart and the fluid cylinder, said fluid cylinder cooperating with the rack and gear means for providing first and second pivotal dumping positions for the cart.

4,452,537

ALARM SETTING APPARATUS FOR TIMEPIECES

Masao Fukuda, and Etsuo Nakada, both of Saitama, Japan, assignors to Rhythm Watch Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1982, Ser. No. 444,728
Claims priority, application Japan, Nov. 30, 1981, 56-179013[U]; Oct. 26, 1982, 57-162265[U]; Oct. 29, 1982, 57-164310[U]
Int. Cl.³ G04B *23/02, 21/00*
U.S. Cl. 368—74 **5 Claims**



1. An alarm setting device for a timepiece comprising:
an alarm intermediate wheel that is assembled in a wheel train of a timepiece and is interlocked with time hands;
an alarm setting wheel held by a main plate coaxially with said alarm intermediate wheel in a freely rotatable manner, and which serves to set an alarm triggering time;
an alarm setting cam that is disposed coaxially with and between said alarm intermediate wheel and alarm setting wheel and being rotatable by being drawn by the alarm intermediate wheel, said alarm setting cam further being freely movable in an axial direction;
a loading spring for pressing the alarm setting cam toward the alarm setting wheel;
wherein:
on one side of said alarm setting cam which faces the alarm intermediate wheel, at least one protrusion is provided, while on the other side thereof that faces the alarm setting wheel, at least two alarm engaging portions are provided;
on one side of said alarm intermediate wheel that faces the alarm setting cam, at least one loose joint for engaging with said protrusion of the alarm setting cam is provided, and this loose joint is longer in its length in a circumferential direction than that of the protrusion of the alarm setting cam in order to drive the alarm setting cam to rotate by dragging said alarm setting cam, thereby making it possible for the protrusion to rotate along the circumferential direction for a predetermined extent within the loose joint;
on one side of the foregoing alarm setting wheel that faces the alarm setting cam, at least two alarm fingers for moving the alarm setting cam towards the axial direction during the alarming operation by engaging with said engaging portions of the alarm setting cam are provided;
said alarm fingers and the engaging portions which are provided on the mutually facing surfaces of the alarm setting cam and the alarm setting wheel each are provided with a sloped depression and a sloped shoulder for making it possible to effect the alarm setting operation in a clockwise as well as in a counterclockwise direction; and

a projection and a recess that can be engaged with said projection are formed, adjacent to said depression on top of the alarm finger and adjacent to the depression of the corresponding engaging portion, and upon engagement of the projection with the recess, the protrusion of the alarm setting cam is pressed against a wall surface of the loose joint of the alarm intermediate wheel, whereby the alarm intermediate wheel and the alarm setting cam are securely engaged at the time of triggering the alarming operation and high precision in alarm setting is achieved.

4,452,538

APPARATUS FOR MEASURING THE TEMPERATURE DISTRIBUTION ALONG THE INSIDE WALLS OF NARROW, SHAFT-SHAPED SPACES

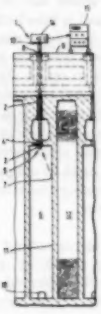
Jürgen Reger, Kohlberg; Bhubaneswar Sarangi, Recklinghausen; Werner Eisenhut, Essen, and Richard Reger, Kohlberg, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 30, 1982, Ser. No. 374,611

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118080

Int. Cl.³ G01K *1/02*

U.S. Cl. 374—124 **7 Claims**



1. Apparatus for measuring the temperature distribution along the inside walls of narrow shaft-shaped spaces such as heating flues of coking and similar ovens, comprising a radiation pyrometer including a tube-shaped measuring lance and a radiation optical system at one of its ends, said radiation optical system being disposed at one end of the space and including a first mirror, tiltable about its axis transverse to the longitudinal axis of the space, for optical coverage of the entire length of the space and forwarding the detected radiation into a path of rays to be evaluated, a second mirror fixed in the path of rays between the path of rays to be evaluated and said first tiltable mirror, and a radiation-permeable plate in the path of rays between the wall to be measured and the tiltable mirror; a photoconductor for the path of rays to be evaluated; a positioning arrangement within said measuring lance for tilting said first mirror over the area to be optically covered, said positioning arrangement including a stepping motor, a rocking lever for positioning the tiltable mirror and operated by said stepping motor, and a spring engaging the tiltable mirror, cooperating with said stepping motor; and an evaluating arrangement, said measuring lance having a wall cooled by cooling means.

4,452,539

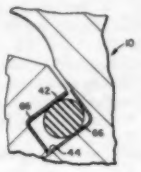
BEARING SEAL FOR ROTATING CUTTER DRILL BIT

Robert F. Evans, and Randy C. Davis, both of Dallas, Tex., assignors to Varel Manufacturing Company, Dallas, Tex.

Filed Oct. 26, 1981, Ser. No. 314,784

Int. Cl.³ F16C *33/74*

U.S. Cl. 384—94 **3 Claims**



1. A drill bit comprising:

a body having a cutter support and defining a sealing surface;

a cutter having cutting structure thereon and defining a sealing surface;

a bearing assembly for rotatably supporting said cutter on the cutter support of said body;

a seal assembly including a flexible seal member in seal contact with said sealing surfaces on said body and cutter; and

an anticorrosion material plated on at least one of the sealing surfaces, said material being resistant to corrosive effects and being higher in the electromotive force series than the material forming the sealing surfaces on said cutter and the cutter support of said body.

4,452,540

BEARING ASSEMBLY FOR THE MOVABLE MEMBER OF A MEASURING INSTRUMENT

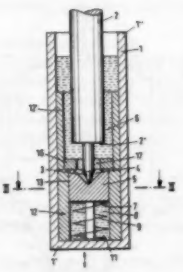
Karl H. Rivoir, Am Nagoldhang 5, 7530 Pforzheim, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,255

Claims priority, application Fed. Rep. of Germany, May 5, 1981, 3117634

Int. Cl.³ F16C *27/08, 17/08*

U.S. Cl. 384—99 **30 Claims**



1. A bearing assembly for mounting the movable member of a measuring instrument comprising: housing means; a bearing element having a bearing side engaging said movable member; first chamber means on said bearing side of said bearing element containing damping liquid for damping rotary movement of said movable member; spring means applying a spring force to said bearing element in the direction toward said movable member; shock absorber means fixed in said housing means operating as abutment means against which said bearing element is urged by said spring means; second chamber means

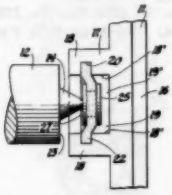
containing damping liquid located on a side of said bearing element opposite said bearing side; and damping liquid passage means provided between said first and second chamber means for effecting passage of damping liquid therebetween upon displacement of said bearing element; said damping liquid passage means defining a flow area through which said damping liquid flows which is dimensionally proportioned relative to said bearing element such that only a relatively small damping force is developed against said bearing element during displacement thereof as a result of flow of said damping liquid through said passage means between said first and second chamber means.

4,452,541

MOTOR ARMATURE SHAFT ENDPLAY REDUCTION APPARATUS

Keith H. Carpenter, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1982, Ser. No. 414,900
Int. Cl.³ F16C *17/08, 27/08*
U.S. Cl. 384—223 **2 Claims**



1. Shaft end play reducing apparatus for a dynamoelectric machine having a rotatable armature including an armature shaft supported for rotation relative to a stator assembly and subject to possible axial shaft end play, the apparatus comprising:

a sheet of resilient material having low noise transmissibility in tension, said sheet being supported by said stator assembly only by its edges adjacent one end of the armature shaft and substantially normal thereto; and

a hardened thrust bearing member supported centrally on said sheet, with respect to the support of said sheet, and spaced radially inwardly from the stator assembly, in abutment with the one end of the armature shaft so as to place the sheet in tension, whereby the shaft end play is reduced with low transmission of noise from the armature shaft and thrust bearing member to the stator assembly.

4,452,542

SERIAL PRINTER

Hiroyuki Akazawa, Shiojiri, Japan, assignor to Epson Corporation, Nagano, Japan

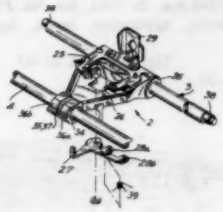
Filed Sep. 24, 1981, Ser. No. 305,413
Claims priority, application Japan, Sep. 25, 1980, 55-136236
Int. Cl.³ B41J *3/12, 25/28*
U.S. Cl. 400—175 **6 Claims**

1. A serial printer comprising:

a print head for printing characters on a recording sheet, said print head having a protruding portion including grooves therein, said grooves having opposed and spaced apart surfaces;

a head carriage supporting said print head and adapted to move across said sheet, said head carriage having an opening in which said protruding portion of said print head is inserted in a first direction for attachment of said head to said carriage;

a head lock lever having resilient portions, said head lock lever being adapted for releasably engaging said print head with said head carriage when said print head is inserted in said opening, said resilient portions of said lock lever engaging said opposed and spaced apart surfaces of said head grooves and exerting forces on both said surfaces respectively of said grooves in said first direction and a second direction opposite to said first direction when said lock lever engages said print head,



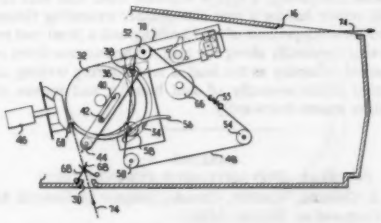
said head and carriage being secure for movement together and said resilient portions restrain said print head from movement in said first and second directions.

4,452,543

HIGH SPEED PRINTER WITH MULTIPLE PAPER PATHS

James W. Adkisson, S. Merrit Is.; David W. Davis, Titusville, and Paul A. Ishman, Melbourne Village, all of Fla., assignors to Florida Data Corporation, Melbourne, Fla.

Filed Jan. 15, 1982, Ser. No. 339,272
Int. Cl.³ B41J *11/00*
U.S. Cl. 400—605 **16 Claims**



1. A printer with multiple paper paths comprising:

a cylindrical rotatable platen;

a printing element disposed adjacent said platen;

a bail mechanism having paper engaging members moveable from a normal position engaging said platen downstream of said printing element to a displaced position spaced from said platen upstream of said printing element;

first paper feed means for supplying continuous forms to said platen along a first path at a position upstream of said printing element and downstream of said displaced position of said bail mechanism;

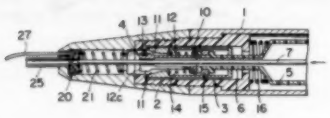
second paper feed means for supplying paper to said platen along a second path for movement of the paper past said printing element by rotation of said platen, and

control means for (a) moving said paper engaging members to said normal position when paper fed by said second paper feed means is presented to said printing element; and (b) positioning said paper engaging means at said displaced position when paper is fed by said first paper feed means.

4,452,544
MECHANICAL PENCIL WITH AUTOMATIC LEAD FEED

Yo Sumita, Tokyo, Japan, assignor to Pilot Precision Kabushiki Kaisha, Hiratsuka, Japan

Filed Apr. 26, 1982, Ser. No. 372,241
Claims priority, application Japan, Apr. 28, 1981, 56-65728[U]
Int. Cl.³ B43K 21/02
U.S. Cl. 401—53 4 Claims

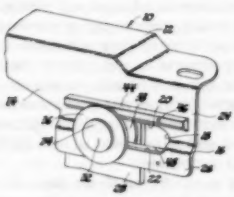


1. A mechanical pencil with automatic lead feed comprising:
a housing having a forward portion;
lead clamping means, positioned within said housing, for clamping a lead in such a manner as to hold the lead steadily against rearward movement but to permit easy forward movement of the lead;
means for guiding movement of the lead and for protecting the lead against bending forces exerted thereon, said means comprising a lead tube having a rear end fixed to said forward portion of said housing;
lead advancing means, positioned forwardly of said lead clamping means, for advancing the lead forwardly through said lead tube, said lead advancing means comprising holder means for frictionally holding the lead and elastic means for urging said holder means forwardly; and
means for, upon wear of the lead during writing, moving said holder means rearwardly along the lead held by said clamping means and thereby compressing said elastic means, whereby upon subsequent separation of the lead from a writing surface, said elastic means urges forwardly said holder means and the lead held thereby, said moving means comprising a sensor separate from said lead tube, said sensor having a rear end slidably extending through said forward portion of said housing and a front end projecting forwardly along the lead to the extreme front end thereof, whereby as the lead is worn during writing said sensor slides inwardly of said housing and moves said holder means rearwardly.

4,452,545
PIVOTAL AND MOVABLE CONNECTION

Albert J. Colautti, Windsor, Canada, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1982, Ser. No. 364,483
Int. Cl.³ F16C 17/26
U.S. Cl. 403—61 3 Claims

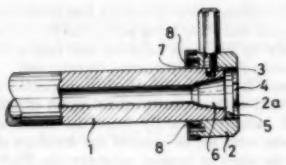


1. A pivotal and movable connection between a pair of members, one member including elongated planar portions located in generally parallel planes, each having an elongated edge portion, said edge portions cooperatively defining an elongated slot, a shaft mounted to the other member and extending through the slot, a pair of rollers rotatably mounted on the shaft, each roller being located in immediate adjacent spaced relationship to a respective edge portion of the slot and being rollingly engageable only with such respective edge portion upon a load being applied to the members in a direction moving such roller toward its respective slot edge portion while moving the other roller away from its respective slot edge portion, and cooperating engageable means on the members to laterally locate the members relative to each other and thereby locate the rollers with respect to their respective slot edge portions.

4,452,546
COUPLING MEMBER FOR COUPLING AN OPTICAL SYSTEM TO AN ENDOSCOPE SHAFT

Siegfried Hiltebrandt, and Ludwig Bonnet, both of Knittlingen, Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 325,760
Int. Cl.³ B25G 3/16; F16B 7/20; F16D 1/00
U.S. Cl. 403—349 3 Claims



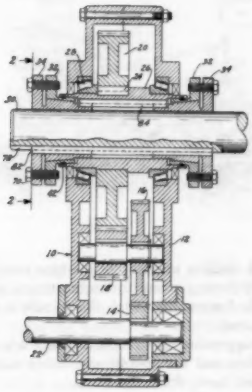
1. In a coupling member for coupling an optical system to an endoscope shaft, comprising a locking ring complementally fitted to the proximal end of said shaft, said locking ring being rotatable on the shaft from a locking position to an insertion position and having a proximal terminal surface presenting an opening of such irregular outline that when the ring is rotated to said insertion position a collar of the optical system is insertible through said opening incidental to locating the optics in said shaft, by rotation of the locking ring out of the insertion position of the optical system, couples said optical system collar to said shaft in the manner of a bayonet joint, the improvement comprising said locking ring being provided with an internal groove in which is located an annular spring bent into an at least partially circular shape said spring bearing at least partially against the bottom of said groove, one end of said spring being connected to said locking ring and the other end of said spring being connected to said shaft so that the spring is stressed by said locking ring rotation toward the insertion position and is stressed sufficiently so that, whereby upon releasing the locking ring after insertion of the optics the stressed spring will rotate the locking ring in the opposite direction to couple the shaft and optics in the manner of said joint with the spring then bearing at least partly against the bottom of said annular groove.

4,452,547

MEANS DETACHABLY MOUNTING A SPEED REDUCING MECHANISM ON A SHAFT TO BE DRIVEN

Albert E. Thiel, Aberdeen, and David E. Suica, Lebanon, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 427,653
Int. Cl.³ B25G *3/20*
U.S. Cl. 403—370 **1 Claim**



1. Means for the detachable, concentric mounting and drive coupling of the power takeoff sleeve of a speed reduction mechanism on a shaft to be driven thereby and loosely inserted through the sleeve comprising; a pair of telescoping bushings inserted into each end of said sleeve, the outer bushing of each pair having a continuous outer cylindrical wall surface and being slip-fitted and rotatable in the ends of said sleeve and being keyed therein against axial movement by split retaining rings inserted into circular keyways in the interior and exterior wall surfaces of said sleeve and outer bushings respectively through apertures in the wall of said sleeve, the inner bushing of each pair being longitudinally split and loosely fitting said shaft, the meeting surfaces of said pairs of bushings being tapered to cause said inner bushings to contract and grip said shaft when drawn into said outer bushings, screw threaded means for drawing said inner bushing into said outer bushings and screw threaded means for withdrawing said inner bushings from said outer bushings, and means keying said shaft to said sleeve to provide a positive driving connection.

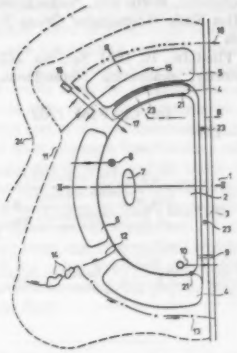
4,452,548

POND WITH FILTERED WATER

Ákos Balogh, and László Széher, both of Esztergom, Hungary, assignors to Komarom Megyei Tanacsi Tervezo Iroda, Esztergom, Hungary

PCT No. PCT/HU81/00013, 371 Date Dec. 2, 1981, 102(e) Date Dec. 2, 1981, PCT Pub. No. WO81/02905, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 2, 1981, Ser. No. 328,541
Claims priority, application Hungary, Apr. 2, 1980, 780/80
Int. Cl.³ E02B *7/00*
U.S. Cl. 405—52 **7 Claims**

1. A pond with filtered water having a relatively large and free surface, characterized in that the pond (2) is laid out along a polluted surface water (1) having a large rate of flow or quantity of water and that a filter dam (3) is built between the polluted body of water (1) and the pond (2) with filtered water, the material of the dam being permeable to water, and means to withdraw water from the pond so as to lower the water level in the pond below the water level of said polluted surface



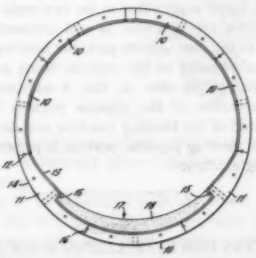
water thereby to cause the latter water to flow through the material of the dam and into the pond.

4,452,549

TUNNEL LINING RINGS

Anthony J. R. Hart, Leicester, England, assignor to Charcon Tunnels Limited, Nottinghamshire, England

Filed Mar. 10, 1982, Ser. No. 356,744
Int. Cl.³ E21D *11/10, 11/15*
U.S. Cl. 405—151 **2 Claims**



1. A tunnel lining ring comprising a plurality of pre-cast arcuate concrete tunnel lining segments connected together to form a ring of circular outer form, the ring comprising a number of arcuate segments of uniform radial thickness and two further arcuate segments disposed in a lower part of the ring, each further segment having a portion extending from one end thereof having a curved inner surface which diverges from the outer surface away from the said end of the segment increasing the radial thickness of the segment to a step extending across the segment in an axial direction and facing toward the other end of the segment, the part of the segment between the step and said other end of the segment being of uniform radial thickness, said further segments being disposed in the ring of segments with the steps facing each other around the lower part of the ring to provide a recess in the lower part of the ring between the steps and a screed cast in the recess with a curved inner surface to merge with said curved inner surfaces of the further segments to provide the required level along the inner surface of the bottom of the tunnel lining ring.

4,452,550

METHOD AND APPARATUS FOR LAYING PIPELINES ON LAND

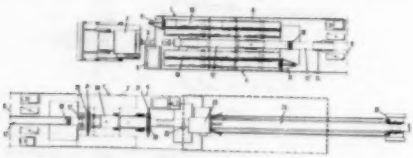
Paul M. Hofmeester, Rotterdam, Netherlands, assignor to Koninklijke Bos Kalis Westminster Group N.V., Paperdrecht, Netherlands

Filed Jul. 10, 1981, Ser. No. 282,013

Claims priority, application Netherlands, Jul. 11, 1980, 8004022

Int. Cl.³ F16L *1/02*

U.S. Cl. 405—154 **6 Claims**



1. Apparatus for welding straight lengths of pipe end-to-end at a location above a trench, bending the thus formed welded pipeline to fit the trench and lowering the bent pipeline into the trench comprising a vehicle divided in two interconnectible parts on opposite sides of a transverse median plane which is perpendicular to the direction of advance of the vehicle, both vehicle parts being supported by mobile supporting means and in the non-connected condition being separately displaceable, said vehicle having a tubular loading space wherein are successively exposed a pipe piece storage rack, a series of movable pipe piece supports for aligning the tandem-disposed pipe pieces, one or more welding stations for welding together the aligned pipe pieces and a pipeline bending machine for bending the welded pipeline, said bending machine being accommodated in the rear vehicle part, comprising two supporting dies and one bending die, disposed in a supporting frame, which supporting frame is provided at the two ends with attachment flanges which are rotatable in and connectible to bearings supported in the rear vehicle part, the bending die, seen in the direction of advance of the vehicle, being positioned behind the two supporting dies so that a substantially fixed and straight centerline of the pipeline portion being welded is created ahead of the bending machine and during the bending process the moving pipeline portion is present in and behind the bending machine.

4,452,551

PROCESS FOR STABILIZING ROCK AND COAL FORMATIONS BY BONDING THESE FORMATIONS TO THEMSELVES OR OTHER GEOLOGICAL FORMATIONS

Diether Arndt, Freinsheim, and Dietmar Hobein, Neu-Esting, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,092

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122693

Int. Cl.³ E02D *3/12*

U.S. Cl. 405—264 **7 Claims**

7. In a process for stabilizing rock formations and coal formations by bonding them to themselves or other geological formations by means of a reactive organic polyisocyanate-polyol mixture, wherein the improvement comprises selecting as the polyol component, a mixture comprising:

(a) from 20 parts to 50 parts by weight of at least one tri- to octafunctional polyether polyol having a hydroxyl number of 390 to 570; and

(b) from 50 to 80 parts by weight of at least one difunctional polyether polyol having a hydroxyl number of 200 to 300.

4,452,552

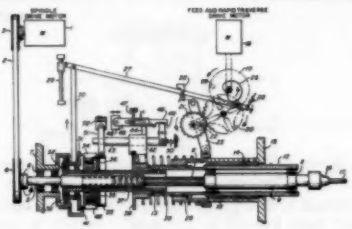
DEPTH SENSING TRIGGER MECHANISM

John A. Watkins, 361 Country Club Rd., Cheshire, Conn. 06410

Division of Ser. No. 195,927, Oct. 10, 1980, Pat. No. 4,362,444. This application May 17, 1982, Ser. No. 378,863

Int. Cl.³ B23B *39/00*

U.S. Cl. 408—14 **4 Claims**



1. In a peck drilling machine of the type employing

(a) a spindle having means for supporting a cutting tool,

(b) a spindle housing in which the spindle is supported for rotation, and

(c) means supporting the spindle housing whereby the spindle housing and the spindle can move axially as a unit toward and away from the work,

the improvement of a trigger mechanism for automatically governing the extent of forward feed of the spindle comprising,

(1) a propulsion tube extending in the direction of axial movement of the spindle, the propulsion tube having a projecting pin affixed thereto,

(2) resilient means urging the propulsion tube in one direction along its longitudinal axis,

(3) a slider mounted to slide along the propulsion tube,

(4) means on the spindle housing causing the slider to move with axial movement of the spindle housing,

(5) a sear pivoted intermediate its ends, the sear having a slot at one end receiving the pin projecting from the propulsion tube,

(6) a lever pivotally mounted at one end, the lever having in it a longitudinally extending slot,

(7) a trigger bar pivotally mounted intermediate its ends, the trigger bar having means at one end for engaging the sear and adjacent its other end carrying a pin extending into the slot in the lever,

(8) a spring urging the lever to pivot about its pivotal axis,

(9) the slider engaging the lever and preventing pivoting of the lever, the slider being adapted to move along the lever and release the lever upon passing the lever's end whereupon the lever is able to pivot and cause the trigger bar to release the sear, and

(10) means actuated upon release of the sear for terminating forward feed of the spindle.

4,452,553

ADJUSTING DRIVE FOR THE CUTTING EDGE OF A TOOL

Theo Kaminsky, Pfungstadt, Fed. Rep. of Germany, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Sep. 8, 1981, Ser. No. 300,067

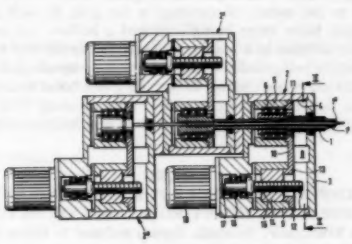
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034210

Int. Cl.³ B23B *39/00, 41/00*; F16H *25/20, 37/12*

U.S. Cl. 408—162 **4 Claims**

1. In an adjusting drive for a tool of the type carrying a radially adjustable cutting edge, the adjusting drive being of the type comprising an axially movable connecting rod operably connected with the cutting edge so that axial movement of the connecting rod radially adjusts the cutting edge, a rotatable

adjusting piston connected to the connecting rod by means of a bearing permitting relative rotation therebetween, a servomotor arranged parallel to the connecting rod and having an output shaft connected to a screw and a spindle nut mounted on said screw and connected to said adjusting piston such that rotation of the screw produces axial movement of the spindle nut and corresponding axial movement of the adjusting piston



and connecting rod, the improvement wherein said output shaft is directly connected to said screw, an axial movable spindle piston receives therein said spindle nut and is disposed laterally of said adjusting piston, and a bridge member connects said spindle piston to said adjusting piston, said adjusting piston and spindle piston being guided in parallel housing bores, and said bridge member extends through a longitudinal slit connecting said two housing bores.

4,452,554

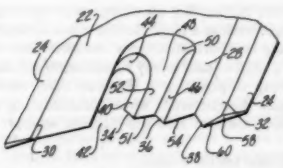
ANNULAR HOLE CUTTER

Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504

Continuation of Ser. No. 303,857, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 170,959, Jul. 21, 1980, abandoned. This application Mar. 14, 1983, Ser. No. 474,874

Int. Cl.³ B23B *41/02, 27/10, 51/00*

U.S. Cl. 408—206 **10 Claims**



1. An annular hole cutter comprising, a cutter body having a generally cylindrical annular side wall having a plurality of cutting teeth spaced circumferentially around the lower end thereof and having means for mounting the cutter on a rotary driving member; a plurality of flutes extending upwardly around the outer periphery of said annular wall from the lower end thereof; each tooth being connected with the next adjacent tooth by a circumferentially extending web at the inner periphery of said annular wall, said webs being juxtaposed radially with said flutes; each flute having circumferentially spaced and generally radially extending leading and trailing side walls and a circumferentially extending inner wall, said inner wall defining the radially outer side of said web; each tooth having a plurality of at least three radially extending cutting edges comprising a radially inner cutting edge extending to the inner periphery of said wall, at least one radially intermediate cutting edge, and at least one radially outer cutting edge, each of said inner and intermediate cutting edges on each tooth being formed on said web, said inner cutting edge being staggered circumferentially forwardly in the direction of rotation of the cutter relative to the intermediate cutting edge sufficiently as to cause each of said edges to cut a separate chip when the cutter is rotated and fed into a workpiece; said web being formed with a gullet extending upwardly from each of the inner and intermediate cutting edges of each tooth, said gullets opening radially outwardly into the radially adjacent flute and each having a radially inner face recessed into the radially outer side of said web and sloping radially outwardly in an upward direction; the outer cutting edge being staggered circumferentially rearwardly from the intermediate cutting edge so as to cut a separate chip, said outer cutting edge defining at least in part the lower end of the circumferentially trailing side wall of the adjacent flute; and each flute having a radial dimension not less than the radial dimension of the widest of the inner and intermediate cutting edges and a circumferential dimension substantially greater than its radial dimension whereby, when the cutter is rotated and fed axially into a workpiece, the chips formed by the inner and intermediate cutting edges on the web portion of the cutter side wall are directed by said inner faces of the gullets upwardly and radially outwardly into the radially adjacent flute.

4,452,555

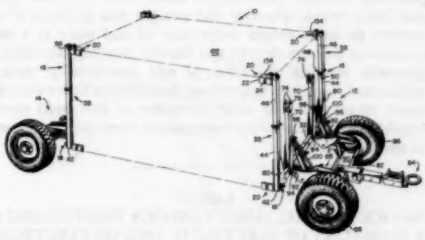
ATTACHMENT APPARATUS

Francis C. Calabro, Pittston, Pa., assignor to The Union Corporation, Verona, Pa.

Filed Sep. 18, 1981, Ser. No. 303,549

Int. Cl.³ B60P *3/40*

U.S. Cl. 410—53 **18 Claims**



1. Apparatus for releasably attaching a wheel assembly to a body unit having standardized corner openings thereon, the apparatus comprising:

a frame adapted to be connected with the wheel assembly for coupling the wheel assembly to the body unit, said frame including at least two frame openings substantially alignable with the standardized corner openings;

securing means for releasably securing said frame with said standardized corner openings, said securing means comprising a substantially circular shaft insertable into each of the frame openings and having a cross-sectional area less than the area of said frame openings so that the shaft is loosely confined so as to be angularly displaceable with respect to a center line of said frame openings, said shaft having an enlarged end portion, the enlarged end portion insertable through the standardized corner openings, said shaft movable with respect to said frame in a direction substantially along the axis of the shaft so that the enlarged end portion of the shaft is insertable within the standardized corner openings when the frame is spaced from the body unit,

rotating means for rotating said shaft to orient the enlarged end portion in a blocking position to prevent removal of the enlarged end portion from the standardized corner openings, tensioning means for tensioning the shaft with respect to the body unit, and locking means for preventing rotation of said shaft from its blocking position.

4,452,556
PLASTIC HEADED FASTENER

John F. Nelson, 911 Herr Dr., New Lenox, Ill. 60451; Ernest H. Lindsay, Jr., 11604 S. Brightway, Mokena, Ill. 60448; Albert M. Zeller, 21822 S. Merrill Ave., Sauk Village, Ill. 60411, and Francis C. Peterson, 1426 Seventh Ct., St. Charles, Ill. 60174

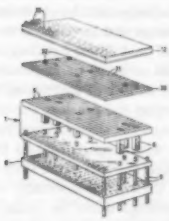
Filed Oct. 6, 1980, Ser. No. 194,510
Int. Cl.³ F16B *23/00, 35/06*
U.S. Cl. 411—377 8 Claims

1. A fastener comprising: a metallic body including a head portion and a shank portion extending from said head portion, said head portion including an outer perimeter having a plurality of substantially straight side portions and an upper surface including a drive recess therein of a predetermined configuration, said recess being symmetrical with and disposed in a predetermined orientation with respect to each of said side portions; and non-metallic cover means substantially enclosing said head portion wherein said cover means generally is conformed to the configuration of said drive recess providing a generally constant thickness of nonmetallic material within said drive recess, whereby said straight side portions of said fastener facilitate proper orientation of said body in a mold preventing damage thereto and thereby insuring formation of generally constant thickness of said non-metallic material within said recess and whereby an interference fit between said cover means and said outer perimeter of said head portion provides for greater torque transmission from said cover means to said head portion.

4,452,557
DEVICE FOR THE SIMULTANEOUS POSITIONING OF A PLURALITY OF ELECTRICAL AND/OR ELECTRONIC PARTS ON A PRINTED CIRCUIT BOARD

Jan Bouwknegt; Louis F. A. Dieleman, and Antonius C. Marneffe, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,664
Claims priority, application Netherlands, Nov. 13, 1980, 8006194
Int. Cl.³ B65G *59/04*
U.S. Cl. 414—118 4 Claims

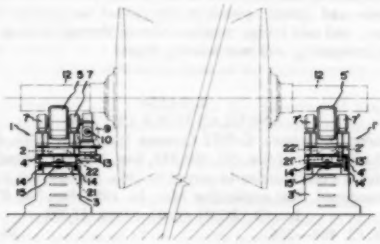


1. A device for the simultaneous positioning of a plurality of electrical and/or electronic parts on a printed circuit board, comprising a transport holder with a number of vacuum openings and a grid which is arranged therebelow and which comprises a matrix of openings in which there are accommodated a number of magazines which contain stacks of said parts, the device comprising means for advancing the stacks of parts until the uppermost part of each stack is in a position in which it can be lifted by vacuum in order to be transplanted to the printed circuit board, characterized in that the transport holder is constructed as a flat box which can be connected to a vacuum pump and which has substantially the same circumferential dimensions as the grid, the upper and lower side of said box being provided with a pattern of guide holes which corresponds to the matrix of openings in the grid, in each pair of associated holes there being arranged a hollow vacuum pin which is slidable in a sealing manner, the upper end of each vacuum pin being sealed and its sidewall comprising an opening, each pin being slidable in both its guide holes to an active position and an inactive position, said opening then being situated inside and outside the vacuum box, respectively.

4,452,558
SUPPORT STRUCTURE FOR CHECKING AND REPAIRING HEAVY ROTATABLE OBJECTS

Yutaka Muraguchi, Nougata, Japan, assignor to Hoko Sangyo Co., Ltd., Fukuoka, Japan

Filed Aug. 27, 1981, Ser. No. 296,736
Claims priority, application Japan, Mar. 5, 1980, 55-28434
Int. Cl.³ F16M *11/14;* B23B *5/20*
U.S. Cl. 414—433 7 Claims



1. A support device for checking and repairing a heavy rotatable object such as a large turbine rotor comprising a pair of self-aligning support structures for rotatably supporting both ends of a shaft of said heavy rotatable object, said support structures being disposed at a distance from each other to provide a space therebetween for accommodating said heavy rotatable object, each of said self-aligning support structures comprising:

(i) a base frame set on a floor,

(ii) a roller support base mounted on said base frame,

(iii) a pair of parallel-spaced-apart support rollers mounted on said roller support base and rotatably supporting one end of the shaft of said heavy rotatable object, each of said pair of parallel-spaced apart support rollers having its own shaft rotatable about generally horizontal axes,

(iv) a single hemispherical support mechanism interposed between said base frame and each of said roller support bases so as to allow said roller support base to tilt in any radial direction on said base frame, each of said hemispherical support mechanisms comprising a support member having a hemispherical surface, each of said hemispherical support mechanisms having a generally vertical axis passing generally through the center of the respective hemispherical surface with an extension of said vertical axis symmetrically bisecting the distance between the horizontal axes of the respective pair of said parallel-spaced-apart rollers, and

(v) a drive mechanism with a reduction means operably coupled with said support rollers on one of said roller support bases and operable to rotate said heavy rotatable object at a low speed,

whereby when both ends of said shaft of said heavy rotatable

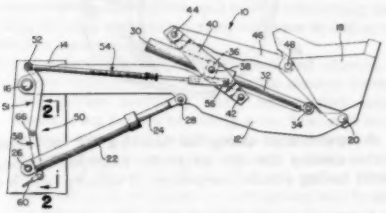
object are placed on said support rollers of said respective support structures, the axes of each of said pair of support roller shafts are automatically aligned in both horizontal and vertical directions to be parallel with the shaft of said heavy rotatable object even when the shaft of said heavy rotatable object is deflected due to its own weight, thus assuring sufficient and uniform support of said heavy rotatable object by said support rollers of said support structure.

4,452,559

ATTACHMENT ASSEMBLY FOR BELLCRANK ARM

Leonard E. Speers, Terre Haute, and Philip D. Redenbarger, Centerpoint, both of Ind., assignors to J.I. Case Company, Racine, Wis.

Filed Sep. 3, 1982, Ser. No. 414,699
Int. Cl.³ E02F *3/86*
U.S. Cl. 414—710 **1 Claim**



1. In a material handling mechanism including at least one lift arm, pivot means securing said lift arm to a frame, a bucket pivotally supported on said lift arm, a lift cylinder for raising and lowering said lift arm, a bucket cylinder for rolling said bucket forwardly or rearwardly relatively to said lift arm, and an anti-rollback linkage including a control arm and bellcrank arm for maintaining the bucket in a level condition and for preventing the bucket from being rolled rearwardly beyond a predetermined maximum rollback position as the lift arm is moved to an extreme raised position, the improvement comprising:

said control arm including an arm portion and a position adjusting shaft member with the longitudinal axis of said position adjusting shaft member being perpendicular to the longitudinal axis of said arm portion, said bellcrank arm generally U-shaped in cross-section and including side wall flanges having openings therethrough for receiving an end portion of said position adjusting shaft member, said end portion adjustably secured to said bellcrank arm by a U-shaped fastener which extends around and engages said end portion and is disposed generally perpendicularly to the axis of said end portion for attachment to said bellcrank arm, said end portion including spaced apart knurled peripheral band areas which are separated by at least one smooth peripheral area, and said knurled peripheral band areas being embedded into said flanges upon tightening said fastener for securely fastening said end portion to said bellcrank arm at a desired location.

4,452,560

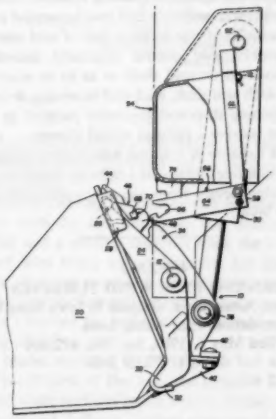
QUICK COUPLER ASSEMBLY

Edward L. Coyle; Herman J. Maurer, and Gary L. Cochran, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 7, 1982, Ser. No. 385,584
Int. Cl.³ E02F *3/81*
U.S. Cl. 414—723 **5 Claims**

1. A quick coupler assembly for attaching a material handling bucket to the free ends of lift arms extending from a tractor loader, said quick coupler assembly including an elongated cross member pivotally connected to said lift arms, said cross member having hitch members mounted on its opposite ends, each hitch member including an upper end which is movable into engagement with an upper coupling member on said bucket near the top edge thereof, the opposite end of each hitch member being configured for engagement with a lower coupling member on said bucket, said coupler assembly further including an attaching lever which is rotatably secured substantially at the mid-portion of said cross member, one end of said attaching lever being movable into engagement with a coupling member on said bucket, the opposite end of said attaching lever including a movable locking bracket assembly which is selectively positioned into locking engagement with a locking member on said bucket, a tilt cylinder for rotating and preloading said bucket against said coupler assembly before said locking bracket assembly is positioned into locking engagement with said locking member.

5. A quick coupler assembly for attaching a material handling bucket to the free ends of lift arms extending from a tractor loader, said quick coupler assembly including an elongated cross member pivotally connected to said lift arms, said cross member having hitch members mounted on its opposite ends, each hitch member including upper and lower ends which are movable into engagement with said bucket, said



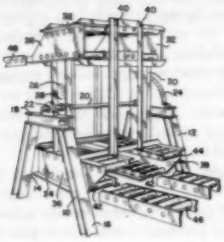
coupler assembly further including an attaching lever which is rotatably secured adjacent to said cross member, one end of said attaching lever including a movable locking bracket assembly which is selectively positioned into locking engagement with a locking member on said bucket, and a tilt cylinder for rotating and preloading said bucket against said attaching lever before said locking bracket assembly is positioned into locking engagement with said locking member, said locking bracket assembly including a lock pin which is movable into locking engagement with said locking member, a manually operable lock lever pivotally attached to a frame assembly, said lock lever including a handle portion and at least one leg having a lock pin receiving portion for releasably holding an end of said lock pin, said lock lever being movable to a first position for holding said attaching lever and lock pin near a stop member on said frame assembly and said lock lever being movable to a second position for seating said lock pin against said locking member while simultaneously permitting said attaching lever to move away from said stop member without interference, and said attaching lever being movable against said stop member in response to said tilt cylinder rotating said bucket against said attaching lever.

4,452,561

RAILWAY WHEEL LIFTER AND INVERTER

Henry R. Forte, Highland, Calif., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Feb. 19, 1982, Ser. No. 350,305
Int. Cl.³ B65G 7/00
U.S. Cl. 414—767 1 Claim



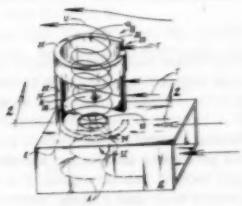
1. An apparatus for moving and inverting a railway wheel, said apparatus comprising a base structure including leg sections and top sections, a shaft mounted on and joining said top sections, a central rotating structure comprising a central structural assembly and two separated end receiving devices affixed one to each end of said central structural assembly, said central structural assembly being fixedly mounted on said shaft so as to be normal to and rotatable with said shaft, each end receiving device having a front opening disposed generally parallel to said shaft adapted to receive a railway wheel therein,
and a device capable of rotating said central rotating structure so as to move and invert a railway wheel located in an end receiving device from one conveyor level to another conveyor level.

4,452,562

TORNADO TYPE WIND TURBINES

Cheng-Ting Hsu, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 6, 1983, Ser. No. 492,464
Int. Cl.³ F03D 3/04
U.S. Cl. 415—2 A 9 Claims



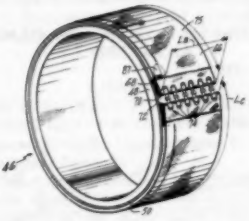
1. A tornado type wind turbine comprising:
a wind collecting tower with vertically disposed longitudinal axis having spaced apart inner and outer walls and a central bore,
a means for providing radially flowing air to said central bore,
a means for providing tangentially flowing air to said central bore,
said wind collecting tower having a lower end in communication with a wind intake chamber and an open upper end,
a portion of said inner wall being porous, and
said radially flowing air and said tangentially flowing air interacting within said central bore of said wind collecting tower so as to create an intensified vortex flow.

4,452,563

CONTAINMENT STRUCTURE

Homer J. Belanger, and Angelo M. Patacca, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,698
Int. Cl.³ F01D 25/24
U.S. Cl. 415—9 41 Claims



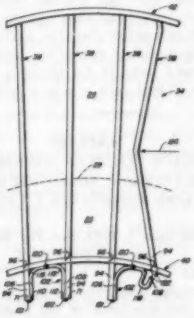
1. A containment casing for blocking the movement of particles moving through an axially extending region, the particles having a radial component of velocity, which comprises:
an inner casing which has an exterior and which extends circumferentially about the axially extending region;
a fabric extending circumferentially about the exterior of the inner casing, the fabric having
a first end,
a second end,
a first mass per unit length in a first portion of the fabric, and
a second mass per unit length in a second portion of the fabric which is smaller than the first mass per unit length; and,
means for applying a load to the first end and the second end which engages the ends to place the fabric in tension.

4,452,564

STATOR VANE ASSEMBLY AND ASSOCIATED METHODS

Ronald G. Conant, and Larry T. Veasey, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 9, 1981, Ser. No. 319,829
Int. Cl.³ F01D 9/02
U.S. Cl. 415—9 40 Claims



1. A stator vane assembly comprising:
(a) first support means;

(b) second support means spaced from said first support means;

(c) a bendable stator vane having first and second opposite side surfaces each having a width and extending lengthwise between said first and second support means, said stator vane further having an end portion adjacent said first support means, and an opposite end portion adjacent said second support means;

(d) first connecting means for connecting said end portion of said stator vane to said first support means with a first vane retention strength; and

(e) second connecting means for resiliently and releasably connecting said opposite end portion of said stator vane to said second support means with a second vane retention strength substantially less than said first vane retention strength in a manner such that if said vane is transversely bent to a sufficient degree said opposite end thereof will be detached from said second support means without causing substantial damage thereto, said second connecting means being the only means connecting said vane to said second support means and including:

(1) a bendable retention member positioned adjacent said second support means, said retention member having a base portion extending along said second support means, a leg portion extending away from said second support means and lengthwise along said opposite end portion of said stator vane across only a relatively small portion of the width of said first side surface thereof, and a curved intermediate portion joining said base and leg portions, said intermediate portion having a relatively large radius of curvature,

(2) first attachment means for securing said base portion to said second support means, and

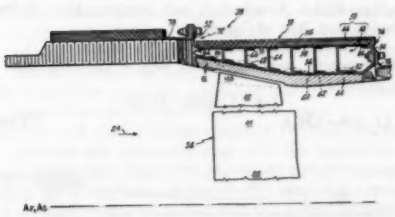
(3) second attachment means for securing said leg portion to said opposite end portion of said stator vane.

4,452,565

CONTAINMENT STRUCTURE

Richard J. Monhardt, Glastonbury; Alfred B. Orr, West Suffield, both of Conn.; Emile J. Premont, South Hadley, Mass., and Joseph B. Wright, Somers, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,693
Int. Cl.³ F01D 25/24
U.S. Cl. 415—9 **9 Claims**



2. A containment structure for a rotary machine which includes:

an annular beam which is hollow and which extends axially and circumferentially about an axis of symmetry, the beam having an outer wall, an inner wall, and a characteristic vibratory pattern at the inner wall which includes spaced nodes and antinodes, the beam further having a plurality of annular plates which are attached to the outer wall, which are attached to the inner wall at said antinodes, and which extend circumferentially about the interior of the beam for stiffening the beam against radial deflection; and,

a fabric extending circumferentially about the beam under tension in the installed condition, the fabric having an end which is attached to the outer wall and having a free length and an installed length, wherein the installed length of the fabric is greater than the free length of the fabric;

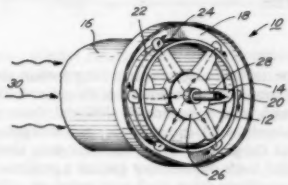
wherein the annular plates transmit vibrations in the beam to the exterior of the beam and wherein the fabric under tension damps vibrations in the annular beam and absorbs energy from containment particles which penetrate the beam.

4,452,566

REACTIVE IMPELLER FOR PRESSURIZING HOT FLUE GASES

Alan Kardas, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jun. 15, 1981, Ser. No. 273,346
Int. Cl.³ F04D 29/58
U.S. Cl. 415—81 **2 Claims**



1. In a flue containing hot flue gases, the improvement of reactive impeller means for pressurizing the hot flue gases in the flue comprising:

an impeller hub having an exterior hub surface in the flue in contact with the hot flue gases and defining a cooling chamber and a cooling chamber inlet, the cooling chamber and inlet being sealed from the hot flue gases, the cooling chamber receiving a pressurized cooling fluid to cool the exterior hub surface and the inlet opening into the cooling chamber for introducing the cooling fluid to the cooling chamber; and

impeller blades mounted on the impeller hub and extending radially outward of the hub, the impeller blades having exterior blade surfaces in the flue in contact with the hot flue gases and defining cooling passages and nozzles, the exterior blade surfaces being shaped to propel the hot flue gases along the flue past the impeller means upon rotational motion of the impeller means, the cooling passages being sealed from the hot flue gases and open to the cooling chamber for transfer of the pressurized cooling fluid from the cooling chamber to the passages to cool the exterior blade surfaces, and the nozzles being open to the cooling passages for expelling the cooling fluid from the cooling passages and being directed for providing rotational driving motion to the impeller in reaction to expulsion of the pressurized cooling fluid through the nozzles,

the impeller means thereby being driven to propel and pressurize the hot flue gases, and the exterior surfaces of the impeller hub and blades being simultaneously cooled to withstand the hot flue gases by passage of the pressurized cooling fluid through the impeller means,

the hot flue gases existing in a flue inside a plenum and the flue defining an impeller blade opening to the plenum,

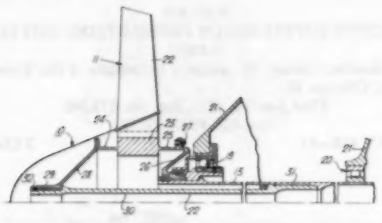
the impeller blades having blade tips extending through the impeller blade opening into the plenum and the exterior hub and blade surfaces being located within the flue,

the reactive impeller means further comprising means on and between the impeller blades adjacent the blade tips for substantially sealing the impeller blade opening against leakage of the hot flue gases from the flue into the plenum.

4,452,567
ROTOR DRIVE SYSTEMS

John M. Treby, and Derek A. Roberts, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 29, 1981, Ser. No. 278,675
Claims priority, application United Kingdom, Jul. 15, 1980, 8023032
Int. Cl.³ F01D 5/02
U.S. Cl. 416—2 4 Claims



1. A gas turbine engine comprising a main shaft; a rotor; a frangible coupling interconnecting the main shaft and the rotor and through which a primary torsional drive is transmitted from the main shaft to the rotor, said coupling designed to disconnect the primary drive from the main shaft to the rotor when radial loads on the rotor exceed a predetermined magnitude; an auxiliary drive shaft connected at a first end to the main shaft and at a second end to the rotor to provide a secondary drive path between the main shaft and the rotor when the coupling disconnects the primary drive betwen the main shaft and the rotor, the auxiliary shaft being more flexible in bending than the main shaft and having its second end pre-twisted elastically in the opposite direction to the direction of rotation of the main shaft; and constraining means to constrain the auxiliary shaft in the pre-twisted state until the coupling disengages the primary drive to the rotor so that when the coupling disengages the primary drive, the auxiliary drive shaft tends to unwind itself, thus cushioning suddenly applied load torque of said auxiliary shaft.

4,452,568
MEANS FOR LIMITING ROTATION SPEED OF A VERTICAL SHAFT WIND TURBINE

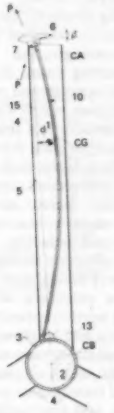
Birger A. V. Andersson, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, LinkUM/o/ ping, Sweden

PCT No. PCT/SE82/00162, 371 Date Dec. 16, 1982, 102(e) Date Dec. 16, 1982, PCT Pub. No. WO82/04103, PCT Pub. Date Nov. 25, 1982
PCT Filed May 11, 1982, Ser. No. 456,038
Claims priority, application Sweden, May 15, 1981, 8103054
Int. Cl.³ F03D 7/06
U.S. Cl. 416—119 7 Claims

1. A wind turbine comprising a central support rotatable about a vertical turbine axis, a plurality of struts rigidly connected with said support and projecting outwardly therefrom substantially radially to said turbine axis, said struts being arranged in sets, there being at least two struts in each set that are vertically spaced apart and have their outer ends vertically aligned, and the struts of the several sets being at uniform angles to one another around said turbine axis, and a plurality of airfoil section blades, one for each set of struts, each blade having pivot connections to the outer ends of the struts of its set and having vertical leading and trailing edges, said wind turbine being characterized by:

A. said pivot connections for each blade having a common pivot axis which is
(1) contained in a plane that also contains the turbine axis,
(2) is near the blade but at the side thereof that is adjacent to the turbine axis, and
(3) is substantially near a point through which extends the resultant of the mean wind forces acting on the blade through its orbit, so that aerodynamic forces have little tendency to swing the blade about said pivot axis; and

B. a plurality of elongated leaf springs, one for each blade, each extending lengthwise between its blade and a zone near the turbine axis to have inner and outer ends, and each
(1) having at its outer end a rigid connection with its blade and



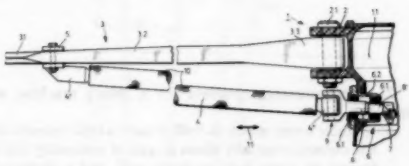
(2) having at its inner end a connection with said central support whereby the inner end portion of the leaf spring is substantially confined against lateral motion but is substantially free for lengthwise motion,

said connections so orienting the leaf spring that the center of gravity of the system comprising the leaf spring and its blade is at all times spaced behind said plane so that centrifugal force acts to flex the leaf spring and swing the trailing edge of the blade outwardly about its pivot axis.

4,452,569
ROTOR HAVING A HINGELESS AND BEARINGLESS BLADE CONNECTION

Michael Stephan, Ottobrunn, and Alois Schwarz, Putzbrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,787
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123082
Int. Cl.³ B64C 27/38
U.S. Cl. 416—134 A 7 Claims



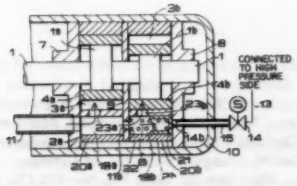
1. A rotor for a rotary wing aircraft, comprising rotor head means, rotor blade means each having a blade neck section which is flexible relative to torsion loads and relative to flapping and lead-lag movements for connecting said rotor blade means in a hingeless and bearingless manner to said rotor head means, blade angle adjustment means including a control rod (4) for bridging said blade neck section, said control rod comprising a hollow tubular member which is stiff against torsion

loads and which is simultaneously flexible relative to blade flapping movements and flexible relative to blade lead-lag movements, first connecting means (5) rigidly connecting a radially outer end (4') of said control rod (4) to the respective rotor blade means, and second connecting means including a radial bearing (6, 9) connecting a radially inner end (4'') of said hollow tubular control rod to said rotor head so that said hollow tubular control rod (4) is twistable about its longitudinal axis for the blade angle adjustment and simultaneously movable axially substantially in the direction of its own longitudinal axis.

4,452,570
MULTIPLE CYLINDER ROTARY COMPRESSOR

Shuji Fujisaki, and Itsuo Chu, both of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,899
Claims priority, application Japan, Nov. 12, 1981, 57-168875[U]
Int. Cl.³ F04B *49/02, 49/06, 49/08*
U.S. Cl. 417—286 **9 Claims**

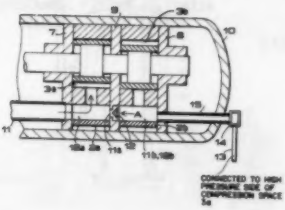


1. A multiple cylinder rotary compressor comprising:
(a) a driving shaft rotated by means of a driving means;
(b) first and second cylinders disposed within a shell containing compression elements each compressing a refrigerant and defining at least first and second compression spaces on the inner peripheral portion of said shell;
(c) first and second rolling pistons provided within said cylinders and rolling along the inner peripheral wall of said cylinders accompanied with rotation of said driving shaft;
(d) first and second vanes for dividing said first and second compression spaces, respectively, into low-pressure and high-pressure side by engaging the inner peripheral wall of said cylinders or the outer peripheral portions of said first and second rolling pistons;
(e) a partition plate for separating said first compression space from said second compression space;
(f) first and second intake chambers disposed within said cylinder and communicating with the respective low-pressure sides of said first and second compression spaces;
(g) a low-pressure gas suction pipe for supplying a low-pressure gas refrigerant to said first and second intake chambers;
(h) a slider provided at one of said intake chambers for opening and closing a communicating opening of said one of said intake chambers;
(i) a spring associated with said slider and urging said slider in a direction opening said communicating opening; and
(j) control pipes provided for communicating the low-pressure sides of said compression spaces substantially stopping the compression function of one of said cylinders in response to opening and closing actions of said slider with the high-pressure side of said first or second compression spaces through a control valve being openably and closably controlled.

4,452,571
MULTIPLE CYLINDER ROTARY COMPRESSOR

Toshihide Koda; Shuji Fujisaki; Kotaro Yoshida; Susumu Kawaguchi, and Ken Asada, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 389,884
Claims priority, application Japan, Jun. 19, 1981, 56-90772
Int. Cl.³ F04B *49/02, 49/06, 49/08*
U.S. Cl. 417—286 **15 Claims**



1. A multiple cylinder rotary compressor comprising:
(a) a driving shaft rotated by means of a driving means;
(b) first and second cylinders disposed within a shell containing compression elements each compressing a refrigerant and defining at least first and second compression spaces on the inner peripheral portion of said shell;
(c) first and second rolling pistons provided within said cylinders and rolling along the inner peripheral wall of said cylinders accompanied with rotation of said driving shaft;
(d) first and second vanes for dividing said first and second compression spaces, respectively, into low-pressure and high-pressure sides by engaging the inner peripheral wall of said cylinders or the outer peripheral portions of said first and second rolling pistons;
(e) a partition plate for separating said first compression space from said second compression space;
(f) a low-pressure gas suction pipe communicating with each low-pressure side of said first and second compression spaces to supply a low-pressure gas refrigerant thereto;
(g) a valve means disposed in a communication passage for communicating each low-pressure side of said first and second spaces with one another; and
(h) control pipes provided for communicating the low pressure sides of said compression spaces substantially stopping the compression function of one of said cylinders in response to opening and closing actions of said valve means with the high-pressure side of said first or second compression spaces through a control valve being openably and closably controlled.

4,452,572
DRY VACUUM DIAPHRAGM PUMP

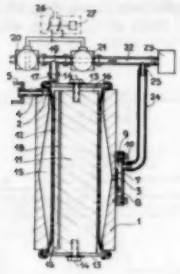
Robert Evrard, 5 rue, 95690 Nesles la Vallee, France

Filed Jul. 23, 1982, Ser. No. 401,060
Claims priority, application France, Jul. 24, 1981, 81 14489
Int. Cl.³ F04B *43/10*
U.S. Cl. 417—395 **9 Claims**

1. Dry vacuum diaphragm pump for transferring a gas from at least one inlet port (2) to at least one exhaust port (3), constituted by a resilient diaphragm (12) retained between a first and second rigid body, in such manner that the volume between the diaphragm (12) and the first rigid body (1) constitutes a pumping chamber (15) into which open the inlet ports and the exhaust ports, and that the volume on the other side of the diaphragm (12) constitutes a control chamber (16) for actuating the diaphragm to cause it to vary the pressure cyclically so as to generate alternatively:
(a) an exhaust movement in which the diaphragm (12) is forced progressively against the first rigid body (1),

thereby first blocking the inlet ports, and then exhausting the gas in the direction of the exhaust ports,

(b) an intake movement in which the diaphragm (12) is returned toward the second rigid body (11), causing first the closure of the exhaust valves and then clearing the inlet ports,



wherein the exhaust ports (3) communicate via the valves (7) with a capacity (9) maintained at a pressure lower than atmospheric pressure by an auxiliary vacuum pump (23), and by the fact that the same comprises a distribution mechanism (21, 22) for placing the control chamber (16) alternatively in communication with atmosphere and with the intake of an auxiliary vacuum pump.

4,452,573

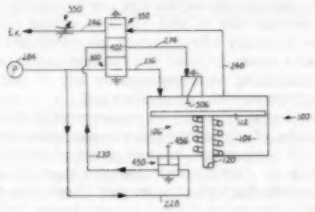
VARIABLE PILOT CHEMICAL PUMP

William H. Samuel, Weatherby Lake, Mo., assignor to Western Chemical Pumps, Inc., Kansas City, Mo.

Filed Feb. 18, 1982, Ser. No. 349,973

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—401 15 Claims



1. A pump actuator comprising:

inlet means for receiving a fluid under pressure;

a power unit including a piston and cylinder with said piston executing a power stroke in response to flow of said fluid into said cylinder;

means for causing said piston to undergo a return stroke subsequent to said power stroke;

power fluid flow paths from said inlet means into said cylinder to effect said power stroke and from said cylinder to permit said return stroke upon flow of a power fluid respectively therethrough;

power fluid gate means for controlling the flow of said power fluid through said associated paths;

means responsive to first and second pressure stimuli for operating said power fluid gate means in a manner to cause said power fluid to alternately flow through said power fluid flow paths;

said gate means further comprising: a valve assembly including first and second movable gate elements associated with said respective power fluid paths; and means for transmitting the response of said operating means to said first and second pressure stimuli into movement of said gate elements into and out of said respective power fluid paths to alternate said power fluid flow into and from said cylinder corresponding to an alternating execution of said power and return strokes;

conduit means for establishing a control fluid flow path from said inlet means to said operating means independently of said power fluid flow paths;

control fluid valve means interposed in said conduit means and responsive to movement of said piston through one of said strokes for communicating said control fluid with said operating means to present said first stimulus thereto; and

means responsive to movement of said piston through the other of said strokes to present said second stimulus thereto whereby to present said alternating power fluid flow for execution of said piston strokes at a controlled rate.

4,452,574

FUEL INJECTION PUMP

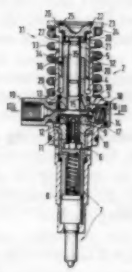
Jean Leblanc, Lyons; Francois Rossignol, Mornant, and Jean Pierre Cigolotti, Chassieu, all of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 22, 1982, Ser. No. 421,176

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201011

Int. Cl.³ F02M *59/44*

U.S. Cl. 417—490 8 Claims



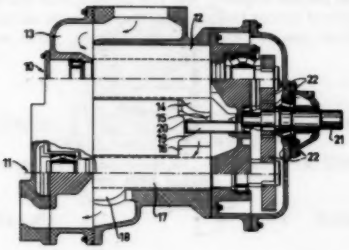
1. An injection pump comprising a pump housing, at least one cylinder and one piston in said cylinder, a drive means connected to said piston, said drive means further being displaceable in the direction of said cylinder and against a force of a restoring spring by means of a mechanical drive element, said pump housing further including a guide conduit, a guide sleeve connected to said drive means, said guide sleeve arranged to reciprocate and being guided in said guide conduit, a locking mechanism for said guide conduit and said guide sleeve said locking mechanism further including a locking element arranged to move in a first longitudinal recess in one of said guide sleeve and said guide conduit further caracterized in that said locking element comprises a bearing means which cooperates with a further curved recess which extends in a circumferential direction in the other of said guide conduit and said guide sleeve.

4,452,575

METHOD AND DEVICE FOR INTERMEDIATE COOLING IN AN OIL-INJECTED MULTI-STAGE SCREW COMPRESSOR

(Lars) Lauritz B. Schibbye, Älgvägen, and Jan Johansson, Gullrisstigen, both of Sweden, assignors to Svenska Rotormaskiner AB, Stockholm, Sweden

Filed Mar. 12, 1982, Ser. No. 357,734
Claims priority, application Sweden, Mar. 13, 1981, 8101619; May 19, 1981, 8103142
Int. Cl.³ F01C 1/16, 18/16
U.S. Cl. 418—1 19 Claims



1. A device for intermediate cooling in an oil injected multi-stage screw compressor having a first stage with meshing rotors to compress gas which exits from said first stage through an output port to a passageway through which said gas is supplied in a main flowing direction to the subsequent stage, said device comprising:

at least one nozzle disposed in said passageway, said nozzle having at least one orifice; and

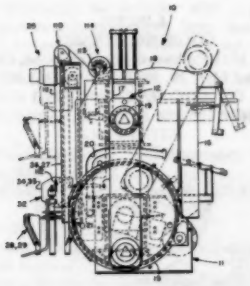
means for supplying oil through said orifice to the compressed gas flowing through said passageway for cooling of said gas, said oil exiting said orifice in a direction at least 90° from the main flowing direction of the gas flowing through said passageway.

4,452,576

TIRE PRESS AND LOADER

Paul M. Sheerer, Columbiana, and Dallas B. Rupp, Lisbon, both of Ohio, assignors to NRM Corporation, Akron, Ohio

Filed Apr. 8, 1983, Ser. No. 483,093
Int. Cl.³ B29H 5/02
U.S. Cl. 425—38 26 Claims



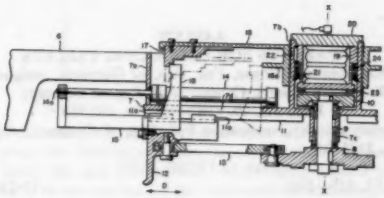
1. A tire press loader comprising a horizontal beam tire chuck means on said beam, drive means at each end thereof for vertically moving said beam, and flexible element means at each end of said beam requiring to be driven downwardly by said drive means but otherwise holding said frame against downward movement.

4,452,577

TIRE LOADER

Nobuhiko Irie, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1983, Ser. No. 509,233
Claims priority, application Japan, Jul. 9, 1982, 57-119222; Jul. 9, 1982, 57-119223; Jul. 9, 1982, 57-119224
Int. Cl.³ B29H 5/02
U.S. Cl. 425—38 9 Claims



1. A tire loader for supplying a green tire into a vulcanizing press, comprising:

(a) a plurality of guide tracks extending radially outwardly;

(b) a plurality of grippers movably mounted on said guide tracks, respectively, for gripping a bead of the green tire in contact therewith;

(c) a plurality of fluid pressure cylinders having rods connected respectively to said grippers and actuatable for moving said grippers along said guide tracks; and

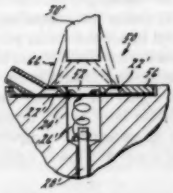
(d) a stop means for limiting the radially outward movement of each of said grippers along said guide tracks.

4,452,578

SPRAY APPARATUS FOR METAL FORMING AND GLASSWARE FORMING MACHINES

Walter E. Levine; Allan B. Heath, and Richard C. Gossman, all of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Continuation-in-part of Ser. No. 297,017, Aug. 27, 1981, Pat. No. 4,364,719. This application Aug. 6, 1982, Ser. No. 404,480
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.
Int. Cl.³ B05B 1/34; C03B 4/02; B21B 45/02
U.S. Cl. 239—463 10 Claims



1. A lubricant spraying apparatus for metal forming and glassware forming machines of the type having a forming cavity into which the material to be formed is placed, and nozzle means arranged to discharge fluid lubricant into the cavity prior to each forming operation such that the walls of the cavity and parts associated therewith in the forming operation are properly coated with the lubricant, said apparatus comprising:

spray ring means adapted to be positioned generally around the opening of the cavity,

said nozzle means being positioned on the spray ring and directed toward said cavity so as to be operative to discharge fluid lubricant into the cavity in a helical tangential flow pattern,

conduit means for connecting the nozzle means and spray ring means to a source of fluid lubricant whereby a predetermined amount of lubricant can be supplied to the cavity at desired intervals of operation.

4,452,579

APPARATUS FOR PRODUCING TABLETS

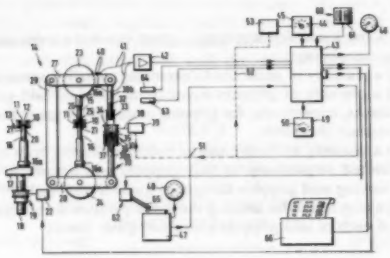
Helmut Janson, Cologne, Fed. Rep. of Germany, assignor to Kilian & Co. GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 29, 1982, Ser. No. 402,855

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131402

Int. Cl.³ B28B *17/00*

U.S. Cl. 425—140 11 Claims



1. In a tablet press for producing tablets from particulate material and which tablet press comprises, (a) a die plate having a bore for receiving particulate material; (b) an adjustable dosing device for feeding a metered amount of particulate material into the bore for forming each tablet; (c) upper ad lower rams reciprocable together in a compression stroke in the bore to compress the particulate material into a tablet and having a preset separation of the rams at the end of this compression stroke which preset separation determines the thickness of the tablet formed; (d) means for measuring the compression pressure existing at the end of the compression stroke of the rams; (e) means for comparing said measured pressure with preselected upper and lower pressure limits and for generating a pressure error signal if said limits are exceeded by the measured pressure; and (f) adjustment means responsive to said pressure error signal for varying the amount of particulate material fed to the bore by the dosing device until the measured pressure on subsequent compression strokes falls within the preselected upper and lower limits, the improvement comprising:

means for sampling and weighing the tablets produced at spaced time intervals;

means for comparing the weight of each tablet so sampled to preselected upper and lower weight limits and for generating a weight error signal if said weight limits are exceeded; and,

means responsive to the weight error signal for varying the preset separation of the rams at the end of the compression stroke and/or the preselected upper and lower pressure limits until the weight of further sampled tablets falls within the preselected weight limits.

4,452,580

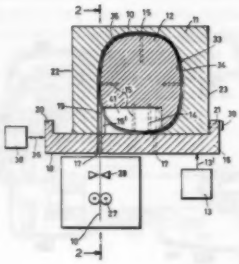
DEEP DRAWING MACHINE FOR MANUFACTURING RECEPTACLES MADE OUT OF THERMOPLASTIC FOIL MATERIAL

Jean M. Dronet, Falaise, France, assignor to Ste d'Application Plastique, Mecanique et Electroniqueet Plastimecanique S.A., Flaiase, France

Filed Jun. 7, 1982, Ser. No. 446,731

Int. Cl.³ B29C *17/00*

U.S. Cl. 425—305.1 16 Claims



1. In a deep-drawing machine for manufacturing containers out of thermoplastic foil material having an arrangement for inserting into the hollow mold prior to the deep drawing step a banderole-shaped strip section, whereby the machine includes support means for a roll of foil material, means for transporting the foil material, and a heating arrangement as well as a forming arrangement, said forming arrangement including a stationary counter mold and the hollow mold which is movable perpendicular to the plane of the foil, which is pressed against a counter mold after the heating of the foil, whereafter the container is formed by means of a pressure medium and thereby simultaneously the strip sections, which have been introduced into the hollow mold, are sealed onto the container, the improvement wherein the arrangement for inserting the banderole-shaped strip sections into the hollow mold includes a winding mandrel which is stationary with respect to the axially movable hollow mold, in the outer peripheral surface of which winding mandrel there are disposed a plurality of bores which are adapted to be placed in communication with a vacuum source, and there is arranged exteriorly of the hollow mold at the inlet side of the banderole-shaped strip sections a slider which is glidably mounted relative to the hollow mold and the winding mandrel, which slider includes a recess, the height of which corresponds to the width of the banderole-shaped strip sections.

4,452,581

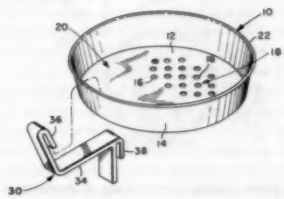
COOKING UTENSIL

Mary Panchal, 1511 Parkwood Rd., Lakewood, Ohio 44107

Filed Mar. 29, 1982, Ser. No. 363,003

Int. Cl.³ A21C *11/16, 3/04;* B29D *7/02*

U.S. Cl. 425—464 15 Claims



1. A cooking utensil comprising a pan with a flat bottom and vertical side means formed integrally with said bottom, and

an array of evenly spaced substantially uniform holes formed only in a portion of said bottom to provide a food extrusion area, the remaining portion of said bottom providing a food holding area, said food holding area comprising at least one-half of the surface area of said bottom, and clamping means for mounting said pan on a cooking vessel, said clamping means comprising a central web portion with a first downwardly facing U-shaped bracket member extending from and overhanging a first end of said web portion and a second U-shaped bracket member extending from an underlying a second end of said web portion, said first end of said web portion being opposite said second end of said web portion, said first U-shaped bracket being adapted for attachment to said pan, said second U-shaped bracket being adapted for attachment to said cooling vessel.

4,452,582

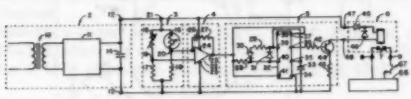
INDEPENDENT, SELF-CONTAINED ELECTRONIC SPARK IGNITION RECYCLER

John P. Portasik, 1119 Anesbury La., Alexandria, Va. 22308

Filed Jun. 18, 1982, Ser. No. 389,765

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—27 **8 Claims**



1. In a heating apparatus that relies on an electronic spark ignition system, the system being such that the system's logic will be recycled to its initial state by temporarily lowering the system's temperature activated switch (or thermostat), by temporarily interrupting a power source or control line, or by short circuiting a specific control line, the improvement comprising: an independent, self-contained, easily installed electronic spark ignition recycler means that periodically causes the electronic ignition to attempt a heater apparatus ignition if a previous attempt failed to achieve ignition and proper operation, the recycler means including a power supply means to allow the recycler means to be self contained, a termperature sensor means for allowing the recycler means to be activated or deactivated independently of the logic or electronics contained in the heater apparatus, a timing circuit means for providing periodic positive voltage pulses of predetermined time which determines a time allocated for recycling, an on/off circuit means for activating and deactivating the timing circuit means according to the needs of the temperature sensor means, a bidirectional switch means responsive to said voltage pulse to cause said system's logic to recycle to its initial state, and a means for deactivating the recycler after a predetermined number of ignition attempts have been made or after a predetermined temperature drop has occurred.

4,452,583

LIQUID HYDROCARBON BURNING METHOD AND APPARATUS

Robert T. Brooks, Kingwood, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jan. 22, 1981, Ser. No. 227,575

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—202 **42 Claims**

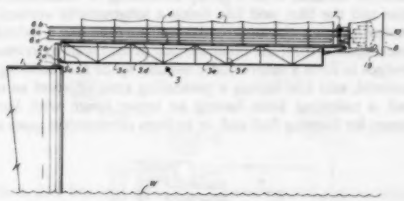
1. The method of burning hydrocarbon-containing matter comprising the steps of:

(1) introducing the discharged hydrocarbon-containing matter into a conduit communicating between a well and a burner apparatus;

(2) conducting a stream of pressurized hydrocarbon-containing matter to a ring of atomizing nozzles disposed in a burner end plate, the axes of said nozzles defining an outwardly flaring cone having an angle of from about 30° to about 60°;

(3) conducting a pressurized gas, including air, to each said atomizing nozzle to effect the atomization of the hydrocarbon-containing matter therein;

(4) igniting the atomized hydrocarbon particles discharged by said atomizing nozzles, thereby producing a conical flame with a substantially hollow central portion; and



(5) conducting a stream of pressurized water to said burner plate and discharging same as an outwardly diverging spray, the said conical water spray being located internally of the nozzles for the hydrocarbon-containing matter and having an angle greater than that of the nozzles for the hydrocarbon-containing matter whereby said water spray substantially penetrates the burning flame cone from the interior thereof.

4,452,584

RING SHAFT KILN FOR CALCINING MATERIALS AND A METHOD OF OPERATION

Ulrich Beckenbach, Fontanestrasse 13, and Helmuth Beckenbach, An den Linden 47, both of D4005 Meerbusch 1, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,701

Claims priority, application European Pat. Off., Dec. 25, 1981, 81110786.1

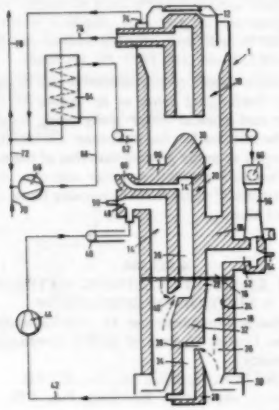
Int. Cl.³ F27D *1/08*

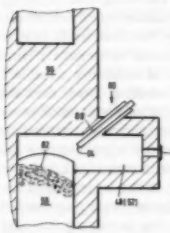
U.S. Cl. 432—14 **19 Claims**

1. In a method for calcining and sintering lumpy material, selected from a group cdnsisting of limestone, dolomite and the like, in a substantially vertical shaft kiln which method includes passing the material successively through a preheating zone, an upper range of calcining zone, a lower range of a calcining zone and a cooling zone, said shaft kiln having a circumferential wall surrounding a shaft insert spaced between the inner wall by refractive bridges extending therebetween to form an annular space for accepting the material to be processed and forming said zones, said kiln having first means for supplying fuel and air in the upper range for burning to produce combustion products flowing upward through the material and second means for supplying fuel and air to the lower range for burning to produce combustion gases flowing both in an upward direction and a downward direction therefrom, means for introducing cooling air adjacent the lower portion of the cooling zone for flow through the cooling zone towards the calcining zone and means adjacent the upper level of the cooling zone for removing the cooling air flowing upward from the means for introducing and also combustion gases flowing in the calcining zone towards the cooling zone, said method including providing fuel and air for burning at each of said first and second means, providing cooling air at the means for introducing, returning cooling air and combustion gases removed at the means for removing to the second means for mixing with additional fuel and air, controlling the supply of air into each of the first and second means to obtain a different amount of air excesses and deficiencies to obtain different temperatures in the upper and lower ranges of the calcining zone, the improvements comprising a refractory bridge being associated with each of said first and second means, introducing the material into said kiln in such a manner that a cavity

exists below each refractory bridge with a cavity surface being formed in the lumpy material and said step of providing fuel and air to each of said first and second means includes introducing solid fuel into the material at each cavity by projecting the solid fuel through each cavity and onto the cavity surface of each of the cavities with at least a portion of the solid fuel being unburned and penetrating the cavity surface to enter the material.

19. In a ring shaft kiln for calcining and sintering a lumpy material selected from a group consisting of limestone, dolomite and the like, said kiln being a substantially vertical kiln having an outer circumferential wall surrounding a cylindrical insert spaced from the inner surface of said wall by refractory bridges to form a substantially annular space for receiving said material, said kiln having a preheating zone adjacent an upper end, a calcining zone having an upper range with burning means for burning fuel and air to form combustion gases and a





lower range having a burner means for burning fuel and air to form combustion gases, a cooling zone between the lower range and a bottom of said kiln, and means for supplying cooling air to the bottom of the cooling zone, said insert having upper and lower hollow sections separated by a cross wall with the lower hollow section being disposed in the cooling zone and the upper hollow section extending from adjacent an upper level of the cooling zone to a point above a plane of the burner means for the upper range, the upper hollow section having an opening in communication with the annular space adjacent to the upper level of the cooling zone and being connected to means for drawing cooling air and also combustion gases flowing downward from the burner means of the lower range into the opening, said means for drawing having means for mixing additional air to the air drawn from the upper hollow section to form a mixture and then returning said mixture to the burner means for the lower range, the improvement comprising a refractory bridge being associated with each of the burner means of the upper and lower ranges, each refractive bridge creating a hollow cavity in the lumpy material with a cavity surface formed by the material, and each of said burner means communicating with its hollow cavity and having means for feeding a solid fuel against the cavity surface as the air is introduced, each of said burner means including a burner chamber extending into the cavity formed by the bridge, and each of said burner chambers being provided with a window to enable observing the cavity and the feeding of solid fuel therein.

4,452,585

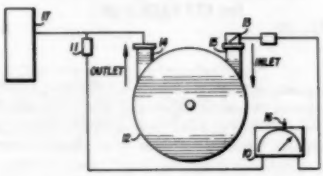
COMBUSTION AIR BLOWER SURGE CONTROL FOR A MELTING FURNACE

David F. Arp, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jun. 2, 1980, Ser. No. 155,321

Int. Cl.³ F27D *7/00;* **F27B** *1/26;* **F01B** *25/00*

U.S. Cl. 432—24 **29 Claims**



1. An apparatus for controlling the flow rate of combustion air to a metal melting furnace while maintaining substantially constant pressure comprising:

a combustion air blower;

a combustion air intake regulator valve connected to said combustion air blower;

a combustion air outlet pressure transducer connected to said combustion air blower for monitoring outlet pressure and generating a pressure signal;

a pressure controller connected to said transducer for receiving said pressure signal, determining required corrective action, and generating an adjustment signal; and

means connected to said controller for receiving and converting said adjustment signal into adjustment of said intake regulator valve.

4,452,586

METHOD OF BLAST HEATING

Bernd Voges, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,363

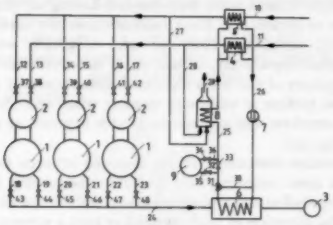
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1981, 3126494

Int. Cl.³ F24H *7/00;* **F28D** *17/00*

U.S. Cl. 432—30 **1 Claim**

1. A blast-heating device having at least one regenerator provided with combustion spaces and with conduits for discharging flue gas, a combustion air supply conduit and a fuel gas supply conduit connected respectively to said combustion spaces, indirect heat exchangers connected respectively in said conduits for combustion air, fuel gas ana flue gas, a recirculation conduit connected to said indirect heat exchangers for circulating a shared heat-transfer liquid, an auxiliary heat exchanger in the form of tube heater connected in series with the circulation line for said heat-transfer liquid, branch conduits connected to said combustion air line and fuel gas line downstream of the corresponding indirect heat exchangers to feed

partial streams of the combustion air and of the fuel gas to said auxiliary heat exchanger, comprising a heat-storing tank for



the heat-transfer liquid connectable in series with the circulation line of the liquid between said indirect heat exchangers.

4,452,587

HEAT SHIELD; AND INSULATION PANELS THEREFOR

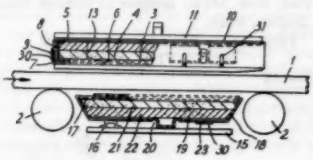
William R. Laws, 19 Tudor Ave., Worcester Park, Surrey, and Geoffrey R. Reed, 8 Beechdene, Tadworth, Surrey, both of England

Continuation-in-part of Ser. No. 91,752, Nov. 6, 1979, Pat. No. 4,343,168, which is a continuation-in-part of Ser. No. 902,560, May 3, 1978, abandoned. This application Feb. 22, 1982, Ser. No. 351,321

Claims priority, application United Kingdom, May 4, 1977, 18760/77; Apr. 27, 1978, 16704/78; Nov. 7, 1978, 43506/78

Int. Cl.[3] **F27D** *3/00;* **B21B** *27/06;* **E04B** *5/52*

U.S. Cl. 432—245 **36 Claims**



17. A composite thermal insulation panel for a metal processing installation and comprising, in combination, a core of heat-insulating material, a protective casing enclosing said core, said casing having a main face, a thin-walled cover plate providing said main face of the casing and forming a membrane adapted to be exposed to thermal radiation from adjacent high temperature material and to form a hot face of the panel with a temperature close to that of said material and to be relatively displaceable to the remainder of the casing to accommodate thermal expansion of said hot face, said membrane comprising surfaces that are inclined from at least two opposite edges to an inner region of the hot face which is thereby at a different level from said edges.

4,452,588

MATHEMATICAL GAME APPARATUS

William O. Smith, 15040 Sprague Rd., Cleveland, Ohio 44130

Filed Jun. 16, 1983, Ser. No. 504,814

Int. Cl.[3] **G09B** *19/02;* **A63F** *9/04*

U.S. Cl. 434—207 **3 Claims**

1. Instructional apparatus comprising, in combination

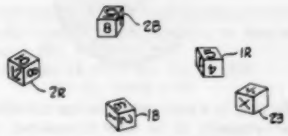
a first die, associated with and bearing a first color and a first set of six numbers, said first die bearing exactly one of each of said first set of numbers upon each of its six faces;

a second die, associated with the bearing a second color and bearing exactly one of each of said first set of numbers upon each of its six faces;

a third die, associated with and bearing said first color and a second set of six numbers, and bearing exactly one of each of said second set of numbers upon each of its six faces;

a fourth die, associated with and bearing said second color and bearing exactly one of said second set of numbers upon each of its six faces;

a fifth die, bearing upon five of its six faces symbols representing addition, subtraction, multiplication, division and zero, and having a face blank;



a sixth die, bearing upon two faces a symbol representing addition and bearing upon two other facaes a symbol representing subtraction and having the remaining two faces blank; and

a seventh die, bearing upon two faces a symbol representing multiplication and bearing upon two other faces a symbol representing division and having the remaining two faces blank.

4,452,589

ARC WELDING SIMULATOR

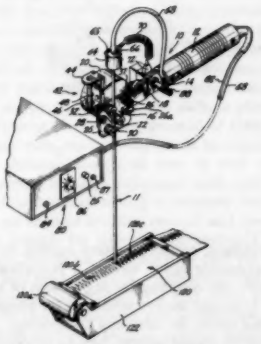
Tom G. Denison, 930 D St., Pullman, Wash. 99163

Filed Aug. 14, 1981, Ser. No. 292,934

The portion of the term of this patent subsequent to Mar. 5, 2000, has been disclaimed.

Int. Cl.[3] **G09B** *9/00*

U.S. Cl. 434—234 **13 Claims**



1. A welding simulator for use with heat-sensitive paper, comprising a handpiece having a heat tube retractably mounted thereon, air supply means coupled to said heat tube for providing a stream of hot air through said tube so as to be projected from one end of said tube, heating means for heating the air projected from said heat tube, and drive means mounted on said handpiece for retracting said tube at a predetermined rate to simulate consumption of an electric arc welding rod.

4,452,590

MODEL OF BARYON STATES AND A DEVICE OF PRODUCING SUCH MODELS

Erik Y. Trell, Regementsgatan 6, S-211 42 Malmö, Sweden

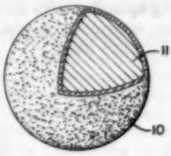
Filed Jan. 5, 1982, Ser. No. 337,125

Int. Cl.[3] **G09B** *23/20*

U.S. Cl. 434—281 **3 Claims**

1. A device for producing a model of Baryon states, com-

prising a body having a permanent form divided into two halves along a plane interface and forming at least one cavity defined by a spheroidal transformation of a homomorphic Euclidean representation of an invariant guage field symmetry



of the Baryon, in a root vector lattice corresponding to the analytical symmetry of the three-dimensional, spherical O(3) Lie algebra, said cavity having a symmetry plane in said interface, and further comprising a balloon-like vesicle filled with a given volume of fluid and filling one said cavity.

4,452,591

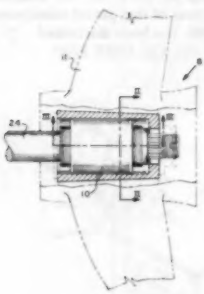
RESILIENT ROTARY COUPLING

Byron L. Fishbaugh; Harold E. Keller, both of St. Mary's, Ohio, and John P. Van Der Aue, West Bloomfield, Mich., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 181,525, Aug. 26, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 470,083

Int. Cl.³ F16D *3/76*

U.S. Cl. 464—89 **11 Claims**



1. A resilient, indexing, rotary marine drive coupling for a marine propellor drive having a propellor and a propellor drive shaft, the coupling having an axis of rotation and being adapted to couple the propellor and the propellor drive shaft of the marine drive, the coupling comprising:

(a) an outer rotary member having an axially elongated inner surface which in section taken perpendicularly to said axis includes at least two arcs of a first radius of curvature having first centers of curvature symmetrically disposed about said axis and an equal number of arcs of a second radius of curvature having second centers of curvature and connecting in alternate manner said arcs of a first radius of curvature, said first radius being a greater radius than said second radius and said second radius being a lesser radius than said first radius, said arcs of greater radius of curvature being located closer to said axis than said arcs of lesser radius of curvature, said inner surface in said section defining a closed figure with a boundary and the first and second centers of curvature of each of said arcs lying on or within the boundary of the closed figure defined by said inner surface in said section and the arcs being connected to one another without any abrupt change of radius or radius of curvature,

(b) an inner rotary member having an axially elongated periphery opposing the inner surface of said outer member, said periphery being of a cross-sectional configuration generally corresponding and complementary to the inner surface of said outer member and having corresponding arcs of greater and lesser radii of curvature having lesser radial dimensions than said arcs of greater and lesser radius, respectively, of said outer member such that the periphery of said inner member is spaced radially from the inner surface of said outer member when each member is centered on said axis and no load is imposed on the coupling, and

(c) resilient elastomeric means disposed between said outer and inner members, said resilient means being in radial compression and contacting completely in the circumferential direction of said coupling at least a portion of each of said inner surface and said periphery,

(d) in which the corresponding arcs of lesser radius of curvature of the inner and outer members are generally aligned when there is no load imposed on the coupling, and

(e) in which the radial distance from the axis of the arcs of lesser radius of curvature of the inner member is less than the radial distance from the axis of the arcs of greater radius of curvature of the outer member, the resiliency of said elastomeric means and the difference between said radial distances being such that permanent rotary displacement of the inner member relative to the outer member occurs to provide said indexing.

4,452,592

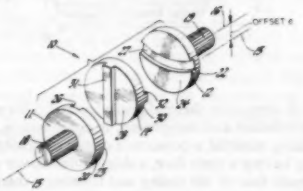
CYCLIC PHASE CHANGE COUPLING

Lung-Wen Tsai, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1982, Ser. No. 383,472

Int. Cl.³ F16D *3/04*

U.S. Cl. 464—102 **4 Claims**



2. A cyclic phase change coupling for connecting two bodies for rotation at equal cyclic speeds but providing a phase angle variation during each cycle, said coupling comprising

first and second members rotatable on offset parallel axes and having opposed ends,

an intermediate member axially aligned with the ends,

first guide means connected said intermediate member with said first member and limiting their relative lateral motion to a straight path, and

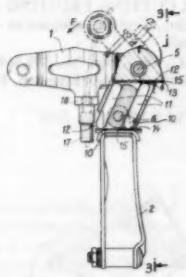
second guide means connecting said intermediate member with said second member and limiting their relative lateral motion to a curved path,

said straight and curved paths, as projected axially upon a common transverse plane, intersecting at a point within the lateral boundaries of said intermediate member, the relative angle of said paths and the curvature of said curved path being such as to cause a predetermined cyclic variation in phase angle between said first and second members upon rotation thereof and the consequent lateral oscillation along said paths of the intermediate member relative to the first and second members.

4,452,593
GUIDING AND ACTUATING MECHANISM IN PARTICULAR FOR A BICYCLE DERAILLEUR

Maurice E. L. Coué, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Jun. 14, 1982, Ser. No. 388,207
Claims priority, application France, Jun. 17, 1981, 81 11974
Int. Cl.³ F16H *11/08*
U.S. Cl. 474—80 7 Claims

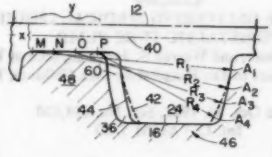


1. A guiding and actuating mechanism, in particular for a bicycle derailleur, said mechanism comprising a support means, movable means, connecting means connecting the movable means to the support means so that the movable means is movable in translation relative to the support means, actuating means for moving the movable means, said connecting means comprising an intermediate member, a pivot pin pivotally connecting the support means to the intermediate member adjacent one end of the intermediate member, a pivot pin pivotally connecting the movable means to the intermediate member adjacent an opposite end of the intermediate member, the two pivot pins being parallel to each other, said intermediate member defining two parallel cavities which extend in a direction orthogonal to the direction in which said two pivot pins extend, two push-members slidably mounted in the two cavities, the movable means defining a first surface, the support means defining a second surface parallel to said first surface, said pins having ends respectively in contact with said first and second surfaces.

4,452,594
TOOTHED BELT AND SPROCKET

Philip M. Patterson, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Oct. 10, 1980, Ser. No. 195,976
Int. Cl.³ F16H *7/02*; F16G *1/28*
U.S. Cl. 474—153 20 Claims



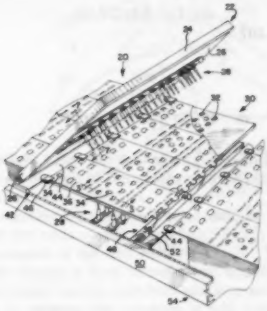
1. A toothed power transmission belt of the type formed with an elastomer, reinforced with a circumferential tensile member that defines a pitch line at an equatorial plane, and teeth having a width W, spaced apart by their pitch P and shaped with land surfaces at an equatorial plane that blend to tooth roots and fore and aft flank surfaces, wherein the improvement comprises:

each belt tooth having its fore and aft blank surfaces shaped in cross section as generally the arc of a circle with a radius R ranging from an initial length at each tooth root that is substantially equal to the pitch P, to a final length that is no greater than the pitch P, and where any center for the radius R is located outside the tooth cross secion and in a region from substantially the equatorial plane of the land surfaces to substantially the equatorial plane of the pitch line.

4,452,595
STRIPPER APPARATUS FOR PAPERBOARD BLANKS

Richard J. Huff, Norwich, Conn., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Jan. 18, 1982, Ser. No. 339,873
Int. Cl.³ B31B *1/74*
U.S. Cl. 493—83 9 Claims



1. An apparatus for stripping precut portions of paperboard from a paperboard sheet supported on an apertured table unit, the apertures in said apertured table unit being constructed and arranged so as, in position of use, to be in respective positions of registry with waste portions precut but not separated from said paperboard sheet, said stripping assembly comprising, in combination, upper and lower pin support frames, each of said frames including a pair of opposed end rails, a plurality of elongated pin mounting tracks being secured at their respective ends to said end rails, each of said tracks having inwardly directed margins defining elongated slots in said tracks, a plurality of pin support brackets associated with each mounting track, each of said tracks having associated therewith a fastener for each pin support bracket, each of said pin support brackets having a fastener for affixing a pin assembly thereto, and a pin assembly associated with each of said pin support brackets, each of said pin assemblies comprising a pin support having a shank portion, a neck portion and a pin extending axially outwardly of one end thereof, and having means on the other end thereof for receiving said pin support fastener, each of said pins being of generally cylindrical form and having a substantially flat end face portion adapted to engage one surface of said precut portions on said paperboard sheet, said mounting tracks and pin support brackets and their associated fasteners being arranged so that the position of said upper and lower pin assemblies may be adjusted with respect to said tracks to a plurality of vertically registered positions, whereby said end faces of said pins may be moved in use toward and away from positions of engagement with the paperboard lying in said precut areas to grip said precut areas therebetween, said upper and lower frames being mounted for reciprocation with respect to each other and also for reciprocation as a unit to grip said precut areas, removing them from the plane of said table and then release them, said pin support brackets and said mounting tracks each being of generally L-shaped cross section, and comprising vertical and horizontal flange portions and being arranged in position of use with said respective vertical flange portions on said support brackets lying along

said vertical flange portions of said support tracks, said horizontal flange portions of said pin support brackets having an area not more than twice to three times the end face area of said shank portion of said pin assembly to present minimal surface area for retention of scrap paperboard taken from said precut area.

4,452,596

APPARATUS FOR MAKING CUP OF SURFACE PROTECTED PAPERBOARD

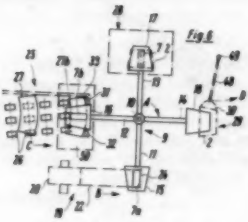
Gerhard Clauss, Donzdorf, and Berthold Müller, Salach, both of Fed. Rep. of Germany, assignors to Michael Horauf Maschinenfabrik, Fed. Rep. of Germany

Continuation of Ser. No. 274,174, Jun. 6, 1981, abandoned. This application Sep. 21, 1982, Ser. No. 420,881

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024407

Int. Cl.³ B31C *7/06*

U.S. Cl. 493—107 **13 Claims**



1. An apparatus for producing a paper cup, the apparatus comprising at least one winding mandrel means for winding a wall blank into a wound cup shell having a seam formed by overlapping ends of the wall blank, means for sealing the wall blank in an interior of the cup in an area of the overlapping ends, and means for inserting a cup bottom into the cup shell, characterized in that means are provided for positioning a protective sealing strip on the at least one winding mandrel means prior to disposing the wall blank on the winding mandrel means so that a sealing of the overlapping ends is obtained by the sealing strip.

4,452,597

METHOD AND APPARATUS FOR FORMING STACKS OF SACKS

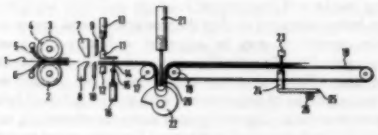
Fritz Achelpohl, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,625

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107287

Int. Cl.³ B31B *23/02*

U.S. Cl. 493—204 **19 Claims**



1. A method of forming stacks from sacks each having at one end a base closed by a transverse weld seam, wherein the leading end of a tubular web of thermoplastic film provided with a transverse weld seam at the end is intermittently moved over the support for the stack, severed from the web by a transverse cut at the spacing of the sack length, and the new web end formed by the cut is closed by a transverse weld seam, and wherein the following sacks likewise formed by transverse weld seams and transverse cuts are deposited on each other up to the desired stack height and the deposited sacks are held at their superposed open sides, characterised in that, starting with the first sack, the individually deposited sacks are at a zone intermediate their ends successively pulled into internested loops of which the depth decreases from sack to sack.

4,452,598

APPARATUS FOR CUTTING PRINTING PLATES

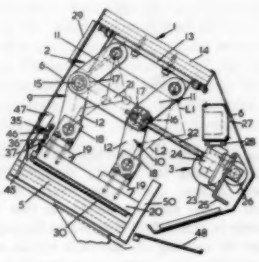
Charles R. Marsh, Romiley, England, assignor to Auto-Masters Ltd., Cheshire, England

Filed Feb. 17, 1982, Ser. No. 349,566

Claims priority, application United Kingdom, Feb. 17, 1981, 8104972

Int. Cl.³ B26D *3/08, 7/01*

U.S. Cl. 493—354 **7 Claims**



1. Apparatus for cutting printing plates, said apparatus comprising:

a cutting press having relatively movable platens,

one of said platens carrying a form cutting tool for at least partially severing from a processed sheet of flexible material, a central image-bearing portion for use as a printing plate, and

retractable registration and holding means for engaging registration targets on said sheet so as to locate the sheet in registry with the form cutting tool and to hold the sheet in position at least until it is held by the pressure of the cutting tool thereon,

and wherein the registration means comprises reciprocal plungers mounted on said one platen so as to pass through respective holes in the cutting tool for engagement with the registration targets on the processed sheet when the press is open.

4,452,599

METHOD OF DELIVERING MEDICAL LIQUID BY PERISTALTIC TUBE PUMP

Anthony M. Albisser, and Warren S. Jackman, both of Toronto, Canada, assignors to The Hospital for Sick Children, Toronto, Canada

Filed Oct. 26, 1981, Ser. No. 314,930

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—49 **1 Claim**

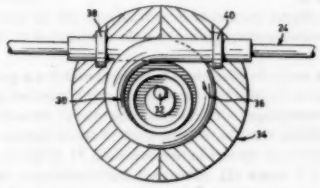
1. A method of delivering a liquid medicament to a patient by means of a peristaltic pump, the method comprising the steps of:

providing a tube assembly which includes a resilient inner tube having a lumen along which liquid can be pumped by occluding the tube and causing the point of occlusion to progress along a length of the tube defining a pumping zone, and an outer resilient tube fitting closely around said inner tube and extending over a length of said inner tube which includes said pumping zone, said tubes being free of attachment to one another over at least the majority of the

length of said zone while being secured together at at least one point along their lengths;

connecting said inner tube between a supply of said liquid and a patient;

occluding said inner tube at a point in said pumping zone by squeezing said outer tube, and repeatedly causing the



point of occlusion to progress along said zone while permitting differential movement to take place between the tubes at said interface whereby particulate material released as a result of said movement is confined outside the lumen of the inner tube and contamination of said liquid flowing along the lumen is substantially avoided.

4,452,600

CORNEA ENDOTHELIAL PROTECTION METHOD

Ronald A. Schachar, 1020 Highway 75 North, Denison, Tex. 75020

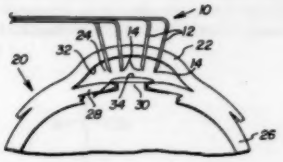
Continuation-in-part of Ser. No. 34,986, May 1, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 296,180

Int. Cl.³ A61M 5/00

U.S. Cl. 604—51 **1 Claim**

1. A method of protecting the corneal endothelium by maintaining the curvature of the cornea at a spaced apart position from an intraocular lens implant and controlling pressure in the anterior chamber of an eye comprising:

(a) forming a plurality of small apertures which extend through the cornea and into the anterior chamber of the eye by simultaneously inserting a plurality of cannulated needle members into and through the cornea into contact with the lens implant, each of said cannulated needle members having first and second ends, the first ends of said members spaced apart and arrayed for insertion through the cornea and into the anterior chamber of the eye for contact with the lens implant with the second ends of said needle members being arrayed with respect to each other and communicating with a manifold for allowing introduction of a fluid therein from said manifold, said



manifold being configured such that frontal access to the central portion of the cornea and the lens implant is unrestricted;

(b) contacting the peripheral regions of the lens implant with said first ends of said needle members in order to prevent movement of the lens implant;

(c) introducing a fluid through said manifold and into said cannulated needle members and into said anterior chamber to increase the pressure in said anterior chamber in order to move the corneal endothelium away from the lens implant while said first ends of said needle members maintain the desired position of the lens implant; and

(d) maintaining the pressure of said fluid at a predetermined level.

4,452,601

PROCESS FOR THE THERMAL STABILIZATION OF ACRYLIC FIBERS AND FILMS

George L. Collins, Maplewood, and Norman W. Thomas, Warren, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,012
Int. Cl.³ C01B 31/07
U.S. Cl. 8—115.5 18 Claims

1. A process for the production of stabilized acrylic fibers and films which are capable of undergoing carbonization comprising:

a. providing a solution consisting essentially of (1) an acrylic polymer selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers containing at least about 85 mole percent of acrylonitrile units and up to about 15 mole percent of one or more monovinyl units copolymerized therewith, (2) about 0.5 to 10 percent by weight based upon the weight of said acrylic polymer of a tetrasubstituted phosphonium salt which is capable of promoting the stabilization of the acrylic polymer, and (3) a solvent for said acrylic polymer and said tetrasubstituted phosphonium salt selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, dimethylsulfoxide, butyrolactone, and N-methyl-2-pyrrolidinone, with said acrylic polymer being present in said solution in a concentration of about 10 to 25 percent by weight based upon the weight of said solvent,

b. extruding said solution through a shaped orifice via solution spinning to form an acrylic fibrous material or film having incorporated therein about 0.5 to 10 percent by weight based upon the weight of said acrylic polymer of said tetrasubstituted phosphonium salt which was initially present in said solution of step (a), and

c. heating said acrylic fibrous material or film having about 0.5 to 10 percent by weight based upon the weight of said acrylic polymer of said tetrasubstituted phosphonium salt which was initially present in said solution of step (a) incorporated therein in an oxygen-containing atmosphere at a temperature of about 200° to 350° C., until a thermally stabilized fibrous material or film is formed which is black in appearance, non-burning when subjected to an ordinary match flame and which is capable of undergoing carbonization, with said thermal stabilization being conducted at an accelerated rate because of the presence of said tetrasubstituted phosphonium salt.

4,452,602

PROCESS FOR DYEING LEATHER WITH MIXTURES OF DYES

Alois Püntener, Pulverweg 13, 4310 Rheinfelden; Josef Koller, Römerstrasse 22, 4153 Reinach, and Fabio Beffa, Burgstrasse 38, 4125 Riehen, all of Switzerland

Filed Mar. 19, 1982, Ser. No. 360,025
Claims priority, application Switzerland, Mar. 23, 1981, 1953/81; Dec. 21, 1981, 8158/81
Int. Cl.³ D06P 1/10, 3/30, 3/32
U.S. Cl. 8—404 23 Claims

1. A process for dyeing leather and furs with a mixture of dyes, which comprises using, for dyeing, an aqueous liquor containing at least three 1:2 chromium or 1:2 cobalt complex dyes which have different colours, belong to the azo, azoazomethine or azomethine series and have 1–6 sulfonic, carboxylic or phosphonic acid groups and which

(a) have a depth of penetration on standard chrome leather of between 20 and 200 μm, the differences in depth of penetration between the individual dyes in the mixture being within a range of 100 μm, and

(b) have no tendency, or only a slight tendency, to aggregate in an aqueous solution containing electrolytes.

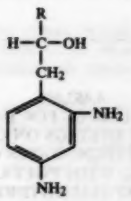
4,452,603

PROCESS FOR DYEING HAIR AND COMPOSITION THEREFOR

Eügen Konrad; Hans Husemeyer, both of Darmstadt, and Herbert Mager, Freibourg, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP79/00099, 371 Date Jul. 17, 1980, 102(e) Date Jul. 17, 1980, PCT Pub. No. WO80/01241, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 17, 1979, Ser. No. 205,321
Int. Cl.³ D06P 3/04
U.S. Cl. 8—405 11 Claims

1. Composition for the oxidative dyeing of hair, characterized by containing 0.1 to 5.0 percent by weight of a combination of a developer substance and a coupler substance, also in the form of its inorganic or organic salts, said coupler substance being a 1-(β-hydroxyalkyl)-2,4-diaminobenzene of the general formula



wherein R signifies a hydrogen atom, or a CH_3 or a C_2H_5 group.

4,452,604

DECORATIVE SHEETS AND COVERINGS COMPRISING POLYVINYL CHLORIDE AND CATIONIC DYESTUFFS

Ronald S. Lenox, East Hempfield Township, Lancaster County; Anne L. Schwartz, West Hempfield Township, Lancaster County, and Moses Sparks, Jr., Manheim Township, Lancaster County, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation of Ser. No. 376,550, May 10, 1982, abandoned.
This application Oct. 11, 1983, Ser. No. 540,678
Int. Cl.³ D06P 1/41, 3/00, 3/79, 5/00
U.S. Cl. 8—471 47 Claims

1. A process for preparing a decorative sheet comprising polyvinyl chloride and a substantially non-migratable image, said process comprising the steps of

selecting a substrate comprising polyvinyl chloride,

interfacing an image composition with said substrate, said image composition comprising at least one cationic dyestuff and a binder, and

heating said interfaced substrate and image composition to migrate said dyestuff into said substrate, said binder being of a type which will not substantially impede migration of said dyestuff.

4,452,605

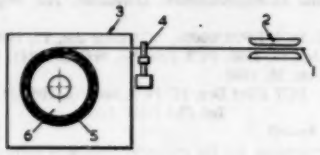
CONTINUOUS YARN DYEING: UNIFORMLY COATING RUNNING YARN WITH DYE LIQUID, DRYING AND FIXING WITH HEAT

Ronald B. Love, Paisley, Scotland, assignor to J & P Coats, Limited, Glasgow, Scotland

Filed Nov. 3, 1982, Ser. No. 438,944
Claims priority, application United Kingdom, Nov. 7, 1981, 8133659
Int. Cl.³ D06B 1/12, 17/04
U.S. Cl. 8—494 8 Claims

1. A process for continuously dyeing yarn which comprises continuously coating a moving yarn with a uniform coating of dye liquid deposited on the surface of the yarn at a rate such

that the amount of dye liquid applied per unit of surface area of the yarn fibres is less than the minimum natural sorptive ability of the same unit of surface area of the yarn fibres to take up



dye, and heating the coated yarn first to cause any liquid present in the dye coating on the surface of the yarn to be substantially removed then to cause the dye to penetrate below the surface of the yarn and become fixed in the yarn.

4,452,606

COMPOSITIONS USEFUL FOR IMPROVING THE FASTNESS OF DYEINGS ON CELLULOSIC SUBSTRATES: PRECONDENSATES OF N-METHYLOL COMPOUND WITH POLYALKYLENE POLYAMINE-EPIHALOHYDRIN PRODUCT

Joseph van Diest, and Salvatore Valenti, both of Binningen, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 10, 1982, Ser. No. 376,900

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119114; Jun. 15, 1981, 3123663

Int. Cl.³ C08G *12/40*; D06P *5/02*

U.S. Cl. 8—496 **29 Claims**

1. A process for improving the fastness properties of a dyestuff or optical brightener on a substrate comprising hydroxy group-containing fibres which process comprises applying to the substrate dyed or printed with said dyestuff or brightened with said optical brightener either a precondensate or a mixture of

(A) the product of reacting a polyalkylenepolyamine in free base or salt form with an epihalohydrin or epihalohydrin precursor

and

(B) an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide in the presence of

(C) a catalyst suitable for the cross-linking of N-methylol compound (B)

and subsequently heat-curing the thus-treated substrate.

4,452,607

PROCESS FOR DYEING SHRINKABLE TEXTILE FABRICS AND RESULTING DYED FABRICS

David A. Wessely, Windsor, England, assignor to Collins & Aikman Corporation, New York, N.Y.

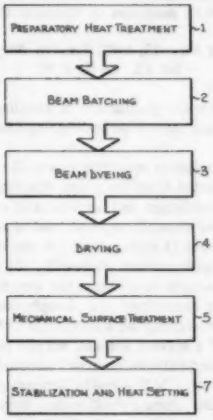
Filed Mar. 3, 1983, Ser. No. 471,823

Claims priority, application United Kingdom, Aug. 17, 1982, 8223612

Int. Cl.³ D06P *7/00*

U.S. Cl. 8—497 **18 Claims**

1. A process for dyeing a textile fabric containing shrinkable polyester fibers, comprising directing the textile fabric in a substantially dry state into a heating zone and advancing the fabric through the heating zone while contacting the fabric with a heated gas and while maintaining the fabric in a substantially tensionless unrestrained condition both lengthwise and widthwise so as to effect substantially unrestricted longitudinal



and widthwise shrinkage of the fabric, and thereafter dyeing the thus shrunken textile fabric.

4,452,608

PROCESS FOR THE PREPARATION OF METAL COMPLEX DYE FORMULATIONS USING MEMBRANE SEPARATION

Paul Erzinger, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 24, 1983, Ser. No. 469,494

Claims priority, application Switzerland, Mar. 5, 1982, 1359/82

Int. Cl.³ C09B *67/54*

U.S. Cl. 8—524 **15 Claims**

1. A process for the preparation of formulations of metal complex dyes by means of a membrane separation process, which process comprises adding an anionic surfactant to the hot synthesis solution of over 50° C. of the metal complex dye before, during or after the final step of the synthesis, and cooling the solution to about 30° C. immediately before the membrane separation process.

4,452,609

DYEING RED WITH 2,6-DICYANO-2'-SULFONAMIDO-4'-AMINO-AZO-BENZENES

Rainer Hamprecht, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

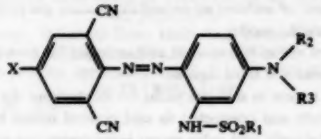
Division of Ser. No. 112,995, Jan. 17, 1980, abandoned, which is a continuation of Ser. No. 110,731, Jan. 9, 1980, abandoned, which is a continuation of Ser. No. 884,954, Mar. 9, 1978, abandoned. This application Dec. 13, 1982, Ser. No. 449,310

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711130; Sep. 3, 1977, 2739842

Int. Cl.³ C07C *161/06*; D06P *1/02*

U.S. Cl. 8—694 **5 Claims**

1. In the coloring of fibrous materials red by dyeing or printing with a dispersion of a dyestuff, the improvement wherein said dyestuff comprises a red-dyeing azo compound of the formula



in which

X is C_1–C_4-alkyl, C_1–C_4-alkoxy, $CH_3(OCH_2CH_2)_mO$, chlorine, bromine or hydrogen,

m is 1–4,

R_1 is C_1–C_4-alkyl, benzyl, phenyl or tolyl,

R_2 is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkyl substituted by C_1–C_4-alkoxy, $C_2H_4OCONHC_4H_9$, $C_2H_4OCOCH_3$ or $C_2H_4OC_2H_4OCH_3$, and

R_3 is benzyl, phenethyl, C_1–C_4-alkyl, C_1–C_4-alkyl substituted by C_1–C_4-alkoxy, $C_2H_4OCOHNC_4H_9$, $C_2H_4OCOCH_3$ or $C_2H_4OC_2H_4OCH_3$.

4,452,610

MODIFIED LIQUID HYDROCARBONS

Frederick A. Waite, Farnham Common, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 30, 1982, Ser. No. 403,818

Claims priority, application United Kingdom, Aug. 7, 1981, 8124151

Int. Cl.³ C10L 1/22

U.S. Cl. 44—62 **11 Claims**

1. A modified liquid hydrocarbon fuel having a flash point of at least 50° F. and having a reduced tendency to particulate dissemination under shock conditions, the fuel containing from 0.05% to 2% of its weight of particles of polymer microgel, the particles having, in the absence of the liquid fuel, a size in the range 0.02 to 0.5 microns and the said polymer being derived from a monomer mixture comprising:

(i) at least one monomer which carries hydroxyl, carboxyl or carboxylamide groups, in an amount of from 0.5% to 15% by weight of the total monomer mixture;

(ii) at least one crosslinking monomer which is multifunctional with respect to the polymerization reaction, in an amount of from 0.0001% to 1% by weight of the total monomer mixture; and

(iii) at least one other monomer different from the monomers (i) and (ii), the total monomers constituting 100% by weight, provided that

(a) monomers (i) and (iii) are so selected that a copolymer thereof, in the absence of monomer (ii), would be soluble in the liquid fuel at concentrations in the range 0.05% to 2% by weight as aforesaid, and

(b) the degree of crosslinking of the polymer is such that the particles of polymer are swollen in the presence of the fuel to an extent such that they exhibit no tendency to settle so as to form a macroscopic separate phase.

4,452,611

DOWNDRAFT CHANNEL BIOMASS GASIFIER

Clarence B. Richey, 2217 Delaware Dr., West Lafayette, Ind. 47906

Filed May 24, 1982, Ser. No. 381,068

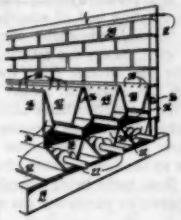
Int. Cl.³ C10J 3/20

U.S. Cl. 48—111 **19 Claims**

1. A biomass downdraft channel gasifier having a means for filling said gasifier with biomass comprising:

(a) an enclosed housing defining a biomass gasification chamber;

(b) at least two generally triangularly-shaped hollow air ducts for the transmittal of air, spaced across the width of said gasification chamber, each of said air ducts having an apex edge and at least one sloping side diverging downward from said apex edge, with each of said sloping sides extending convergingly towards a sloping side of an adjacent air duct to define an open-bottom V-shaped channel therebetween for support of said biomass material, said air ducts each having air jet openings disposed longitudinally along their apex edge for outlet of air to said gasification chamber to provide oxygen for gasification of said biomass;



(c) a grate member placed in said gasification chamber below said air ducts which allows passage of gaseous substances and biomass ash, yet supports biomass fuel and char;

(d) means defining air entrance openings in adjacent ends of said air ducts for the reception of said air;

(e) means defining one or more outlets for the producer gas generated in the said gasification chamber.

4,452,612

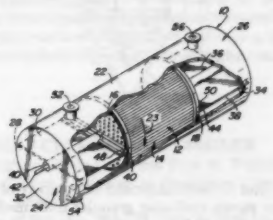
SEPARATION AND PURIFICATION OF GASES AND VAPORS BY CONTINUOUS PRESSURE-SWING ADSORPTION

Manlio M. Mattia, West Chester, Pa., assignor to Cubemco, Inc., West Chester, Pa.

Filed Sep. 22, 1982, Ser. No. 421,642

Int. Cl.³ B01D 53/06

U.S. Cl. 55—25 **18 Claims**



1. A pressure swing adsorption process for separating or purifying a gas mixture having more and less adsorbable components selectively adsorbable at predetermined pressure levels comprising continuously and simultaneously subjecting a rotating bed of adsorbent material to the following steps by rotating the bed to sequentially align discrete adjacent sections of the bed with a plurality of sectors within a single vessel:

(a) sequentially aligning each section of the bed with a first sector of the vessel in which pressurized gas mixture flows through the section of the bed aligned with the first sector and contacts the adsorbent to adsorb the more adsorbable component, thereby separating the more adsorbable component from the less adsorbable component;

(b) recovering the unadsorbed less adsorbable component as a primary product;

(c) subsequently sequentially aligning each section with a second sector of the vessel in which the pressure is lowered to desorb from the section of the bed aligned with the second sector the adsorbed more adsorbable component

and any adsorbed portion of the less adsorbable component; and

(d) recovering the desorbed components as a secondary product.

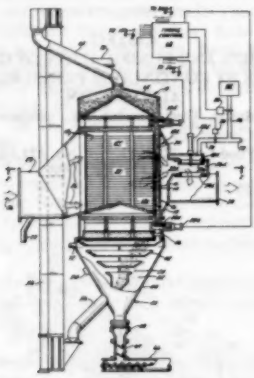
10. Pressure swing adsorption apparatus for separating or purifying a gas mixture having more and less adsorbable components comprising within a common housing a high pressure inlet chamber, a high pressure outlet chamber, and a low pressure chamber, a rotating bed of adsorbent capable of selectively adsorbing the more adsorbable component at a predetermined pressure level, means for establishing a high pressure flow path for the gas mixture from the high pressure inlet chamber through the adsorbent means to the high pressure outlet chamber, the more adsorbable component being adsorbable by the adsorbent in the high pressure flow path, means for establishing a low pressure desorption flow path from the adsorbent means to the low pressure chamber, the means for establishing the flow paths being operable simultaneously to continuously separate or purify the gas mixture.

4,452,613

VERTICAL MEDIA BED FILTER AND METHOD OF CLEANING FILTER PANELS

Denis G. Littrell, Anchorage, Ky., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 16, 1982, Ser. No. 348,882
Int. Cl.³ B01D *46/04, 46/34*
U.S. Cl. 55—96 **7 Claims**



1. In a filter device comprised of an array of vertically disposed filter panels enclosing granular filter media, which panels define a central plenum within said array, a contaminated gas inlet communicating with the central plenum, a gas outlet communicating by way of a clean gas path with each of the panels along a surface thereof remote from the central plenum, means for discharging said media from each of said panels in a predetermined sequential order, separating means communicating with each of said panels for separating dust from the media when discharged, recirculating means communicating with said separating means for recirculating said media into said panels from which media has been discharged, an improvement which comprises:

means defining an evacuation gas path positioned and arranged with respect to the recirculating means, separating means, and contaminated gas inlet for directing gas counter to the flow of said granular filter media in said separating means and said recirculating means;

means defining a first gas path positioned and arranged with respect to said evacuation gas path and further positioned and arranged with respect to each of said panels for connecting the remote surfaces of each of said panels to said evacuation gas path in a second operating mode;

means defining a second gas path positioned and arranged with respect to said evacuation gas path for connecting a source of ambient air to said evacuation gas path in a first operating mode;

control means constructed and arranged for providing first, second and third signals;

valve means in said gas paths for controlling the gas flow therein and connected to said control means to receive said signals, said valve means being responsive to said first signal from said control means operating in said first mode for interrupting the flow of gas through one of said panels along said clean gas path to the clean gas outlet, and for opening said second gas path to a flow from the ambient air source into said evacuation gas path;

said valve means being responsive to said second signal from said control means operating in said second mode for interrupting said flow of ambient gas along said second gas path, and for opening said first gas path between the associated panel and said evacuation gas path while maintaining closed said clean gas path; and

said valve means being responsive to said third signal from said control means operating in a third mode for interrupting said flows of gas along said first and second evacuation gas paths and for opening said clean gas path between the associated panel and the clean gas outlet.

7. A method of cleaning the residual dust from filter panels containing granular filter media after dirty media has been removed from said panels for cleaning and replaced with clean media in a granular media gas cleaner having: a media cleaning system comprised of separating and recirculating means for periodically removing the filter media from said filter panels, and circulating the granular filter media in a certain direction through a series of steps which mechanically separate agglomerated dust from the granular filter media, and returning the granular filter media to said filter panels; inlet means for conveying dust contaminated gas into a central plenum defined by inside faces of a plurality of said filter panels containing said granular filter media; a plurality of exhaust plenums bounded in part by outside faces of said filter panels; a clean gas path for conveying clean gas from which the dust has been filtered in said filter panels from said exhaust plenums to a clean gas outlet; an evacuation gas path for conveying gas from said exhaust plenums through said media cleaning system in a direction counter to the direction of movement of said granular filter media through said media cleaning system; and an ambient gas path for conveying gas from an ambient gas source to said evacuation gas path; wherein said method comprises:

in a first mode, closing the gas flow in said clean gas path through of one of said panels, closing the gas flow in said evacuation gas path through said one panel, and opening the gas flow in said ambient gas path;

emptying the granular filter media from said one panel into said media cleaning system, and refilling said panel with clean media;

in a second mode, closing the gas flow in said ambient gas path and opening the gas flow in said evacuation gas path through said one panel;

maintaining said second mode gas flow through said one panel and said evacuation gas path open for a predetermined time period to carry away the loose dust present in said one panel into said evacuation gas path; and

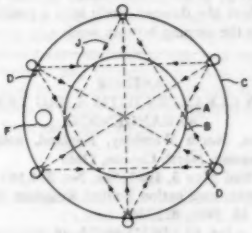
in an operational mode, opening said gas flow in said clean gas path through said one panel to said clean gas outlet, and closing said gas flow through said evacuation gas path.

4,452,614

APPARATUS FOR COLLECTION OF DUST AND SOOT BY WETTING

Ervin Kovac, Industrial Zone, Haifa Bay, Israel

Filed Jul. 29, 1981, Ser. No. 287,988
Claims priority, application Israel, Aug. 5, 1980, 60766
Int. Cl.³ B01D 47/00
U.S. Cl. 55—220 2 Claims



1. An apparatus for collection of dust and soot particles emitted by a gas leaving a stack comprising:

(a) spray means including water inlet pipe means positioned circumferentially above and beyond a periphery of the stack including a plurality of spaced jet means for directing a plurality of horizontal fan like water sprays from a plurality of different fixed circumferential locations toward and across an imaginary extension of the stack above the top of the stack, each jet means directing a water spray horizontally outward from a separate location and said jet means positioned along an arc while each being maintained on a single horizontal level, each of the circumferential locations being on a different vertical level from each other and all of said locations being evenly and substantially spaced-apart so that each jet means delivers a spray completely across the top of the stack without interference from other such sprays and so that the jet means delivers fan like sprays in the form of a symmetrical star-like pattern of water sprays when viewed from above covering the entire area directly above the stack through which the gas passes;

(b) collector means being unobstructed and having an inside diameter greater than the inside diameter of the stack and extending above the stack and surrounding the spray means and for collecting the sprays containing the dust and soot particles, the collector means having an unobstructed gas outlet opening therein to permit the gas to freely escape from the collector; and

(c) water outlet means coupled to the collector means for removal of water, dust and soot particles therefrom.

4,452,615

AIR CONDITIONING SYSTEM

Hugo Schlachet, Cleveland Heights, Ohio, assignor to Bessam Manufacturing Company, Bedford Heights, Ohio

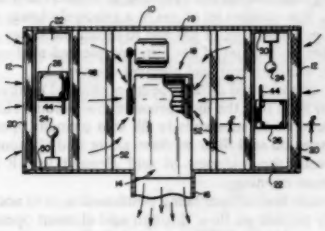
Filed Sep. 22, 1982, Ser. No. 407,310
Int. Cl.³ B01D 47/00
U.S. Cl. 55—227 17 Claims

1. In an apparatus for filtering, washing and cooling gas, the combination including:

means forming a chamber, inlet means for admitting gas to said chamber, and outlet means for conducting gas away from said chamber, a wet foraminous wall within said chamber extending transverse to the direction of gas flow and through which gas passes in its trip from the inlet means to the outlet means, a pool of water disposed in the bottom of said chamber, means for controlling the upper surface level of said water, said water being of a depth controlled by said controlling means, means for forcing gas through said foraminous wall and means for spraying a curtain of water from said pool across the chamber between the inlet means and the wall, said sprayed water serving to filter, wash and cool gas within said chamber, said foraminous wall serving to prevent entrainment of large droplets of water in the stream of gas passing therethrough,

the means for spraying water including a single disc rotatable in one direction about an axis, said rotation being in a plane substantially vertical and substantially perpendicular to the direction of flow of said gas, said disc having a plurality of radially extending vanes projecting from one side thereof and a plurality of apertures therethrough, the lowest portion of said disc being covered with said water,

drive means for rotating said disc in one direction about its axis,



a shield mounted adjacent said disc and extending radially thereof above the water level to deflect droplets of water flung from the periphery of the disc, said deflection being in a direction generally upward and toward the foraminous wall, said shield being nearest the portion of the disc which first emerges from the water in its rotation,

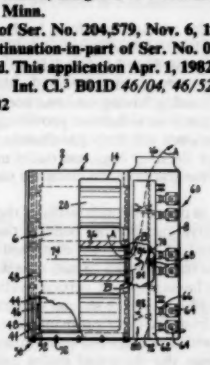
means in the chamber for mounting the drive means adjacent the bottom of the chamber and holding the same in fixed position comprising a frame generally rectangular in form affixed to the bottom of said chamber and including upwardly extending flanges, at least two of said flanges including inwardly projecting dimples designed to engage a converging surface on said drive means to grip the same and releasably hold it in position during the rotation of the disc.

4,452,616

SELF-CLEANING AIR CLEANER

Gary R. Gillingham, Prior Lake, and Fred H. Wahlquist, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 204,579, Nov. 6, 1980, abandoned, which is a continuation-in-part of Ser. No. 020,477, Mar. 14, 1979, abandoned. This application Apr. 1, 1982, Ser. No. 364,535
Int. Cl.³ B01D 46/04, 46/52
U.S. Cl. 55—302 9 Claims



1. In a self-cleaning air filter of the pulse-jet type having a housing which includes a dirty air plenum separated from a

clean air plenum therein by a partition having an outlet opening therein, at least one pleated medium filter element mounted in said dirty air plenum flush with said partition and having a length, a closed first end, a second end having an opening aligned with said partition outlet opening for communication with said clean air plenum, and a hollow interior, and pulse-jet cleaning means mounted in said clean air plenum for providing a high pressure, low volume cleaning jet of gas, wherein the improvement comprises:

at least one nozzle connected to said pulse-jet cleaning means, said nozzle being positioned in said clean air plenum and directed towards said outlet opening and said filter element; and

a diffuser mounted between said nozzle and said filter element opening, said diffuser having an apex directed towards said nozzle, a side L, an included angle θ, and being constructed and arranged to convert said high pressure, low volume jet of gas to a relatively lower pressure, higher volume jet of gas and to direct the lower pressure, higher volume jet of gas into said pleated medium of said filter element near said element opening;

said nozzle and said diffuser being positioned relative to each other such that the high pressure low volume cleaning jet is directed to substantially fill said element opening and impinge on said filter medium along said element interior between the midpoint of said element length and said element opening;

said nozzle and diffuser being positioned so as to not substantially restrict air flow through said element opening.

4,452,617

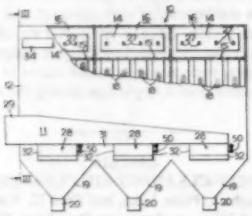
DIRTY GAS INLET FOR A FILTER IN A BAGHOUSE INSTALLATION

Leonard J. O'Dell, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 27, 1982, Ser. No. 453,516

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 R **8 Claims**



8. A dirty gas inlet arrangement for a baghouse including a flow-through filter housing having vertical side walls, an apertured plate dividing the filter housing into an upper clean gas plenum and a lower dirty gas chamber, a plurality of filter bags suspended in the housing having one end connected with the apertures in the plate in a fashion providing flow-through communication between the dirty gas chamber and the clean gas plenum through the filter bags, and outlet means providing for the egress of clean gas from the clean gas plenum, comprising:

a dirty gas inlet in one of the side walls of the housing opening into the dirty gas chamber beneath the filter bags;

a dirty gas manifold having an elongated bottom outlet extending generally parallel to said side wall;

an inlet housing having spaced vertical walls and a bottom wall extending between the spaced vertical walls sloping downwardly from the dirty gas manifold to said side wall cooperating with the manifold to form an inlet duct extending between the elongated outlet and the dirty gas inlet; and

a damper assembly for selectively closing off the bottom outlet of the manifold, said assembly including a pivot shaft extending generally parallel to the bottom outlet between the spaced vertical walls, bearing means rotatably supporting the shaft within the inlet housing, a lever arm cantilevered from the shaft, an elongated damper blade sized to underlie the marginal edge of the bottom outlet pivotally secured to the free end of the lever arm, and actuating means for selectively rotating the shaft to lift the damper blade into sealing engagement with the marginal edge of the bottom outlet to close off the outlet and to lower the damper blade into a position generally parallel to the sloping bottom wall.

4,452,618

SUCTION CLEANERS WITH A BAG TRANSFER ARRANGEMENT

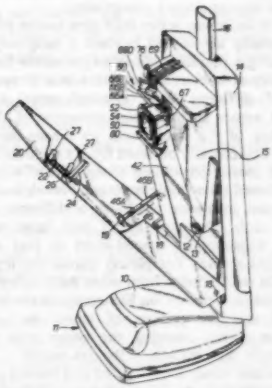
Harbey Kuplas, North Wembley, England, assignor to The Hoover Company, North Canton, Ohio

Filed May 3, 1982, Ser. No. 374,161

Claims priority, application United Kingdom, May 7, 1981, 8113955; Dec. 10, 1981, 8137344

Int. Cl.³ B01D *46/02, 46/42*

U.S. Cl. 55—362 **8 Claims**



1. A suction cleaner including a suction means, a dirt collecting bag disposed in a dirt collecting bag receiving cavity, a bag carrier and a bag mount movable relatively towards one another, a securing means for automatically securing said dirt collecting bag on the bag mount upon relative movement between said bag carrier and said bag mount, said dirt collecting bag, when secured, having an opening in sealing engagement with an air conduit, said air conduit forming said bag mount, said bag carrier and said bag mount being relatively separable after securement to permit said dirt collecting bag to expand between said bag carrier and said bag mount, said bag carrier acting as a magazine to receive a plurality of fresh dirt collecting bags, at least one fresh bag being disposed in said magazine, a casing forming said cavity, said air conduit being in communication with said suction means and said casing such that said bag mount is disposed in said cavity, said bag carrier being disposed on said casing so as to be in communication with said cavity, said bag carrier being movable between an open position with respect to said casing to permit withdrawal of said dirt collecting bag when full and a bag transfer position with said fresh dirt collecting bag being disposed closely adjacent said bag mount, said bag mount being movable between a bag unloading position and an operative position in which the fresh bag is in sealing engagement with said conduit and is carried by the bag mount away from the bag carrier.

8. A suction cleaner having a suction means and a casing forming a dirt bag receiving compartment, a bag carrier

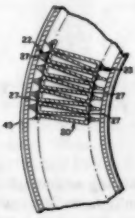
formed on said casing and a bag mount disposed within said compartment at least one dirt collecting bag being disposed on each of said bag carrier and said bag mount, said bag carrier acting as a magazine for the storage of at least one fresh bag, the bag on said carrier constituting said fresh bag, said bag carrier and said bag mount being relatively movable towards one another to automatically cause securing means for securing said fresh bag on said bag mount when said bag on said bag mount is full and has been removed with an opening of said fresh bag in sealing engagement with an air conduit, said air conduit forming said bag mount and being in communication with said suction means and said casing, said bag mount being movable between a bag unloading position relatively away from said casing to permit removal of said full bag and an operative position in which said fresh bag is carried by the bag mount away from said bag carrier.

4,452,619

PLEATED FILTER ELEMENT HAVING INTEGRAL PLEAT SPACERS

Mervin E. Wright, Apple Valley; Sheila C. Peyraud, Minnetonka, and Bradley B. Nielsen, St. Louis Park, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jun. 18, 1982, Ser. No. 390,065
Int. Cl.³ B01D *27/06, 46/52*
U.S. Cl. 55—521 **14 Claims**



1. In a filter element having a succession of interconnected pleats, each of said pleats having an individual pleat tip portion defining an outermost edge of said filter element, wherein said filter element further includes integrally formed pleat spacing means, said pleat spacing means being the sole spacing means for said element and comprising:

a pattern scored upon a plurality of said pleat tip portions, said pattern including a continuous score line, said score line including a plurality of curvilinear line portions each configured to project said respective pleat tip portion a predetermined distance and generally transversely with respect to adjacent pleats on either side thereof, each of said pleats is spaced apart from an adjacent pleat thereto along said respective score lines on said pleat tip portions such that adjacent projected pleat tip portions abut each other along said score lines.

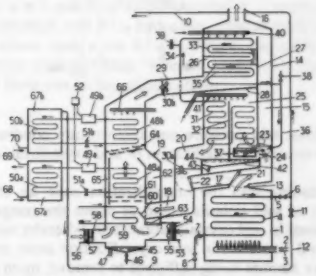
4,452,620

INSTALLATION FOR CENTRAL HEATING AND/OR FOR THE PRODUCTION OF HOT WATER FOR SANITARY OR INDUSTRIAL PURPOSES

René Dosmond "La Poussiniere"-Hameau de la Jonchére-Chemin des Vignes, 92500 Rueil Malmaison, France

Filed Mar. 2, 1981, Ser. No. 239,562
Claims priority, application France, Mar. 7, 1980, 80 05249
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **1 Claim**

1. A central heating and/or hot-water production installation, of the type comprising at least one conventional heat source of the liquid or gaseous fuel boiler kind, and at least one thermodynamic heat source with heat pump, particularly of the compression heat-cycle kind formed from a closed circuit in which flows a refrigerating fluid and comprising in series, in a known way, an evaporator, a compressor, a condenser forming the thermodynamic heat source properly speaking and an expansion member for the condensed refrigerating fluid, one or more circuits for the circulation of the heat-carrying fluid of the central heating and for the production of hot water for sanitary or industrial purposes being furthermore provided and arranged so as to be in heat-exchange relation with said above-mentioned heat sources, in which installation at least one heat-pump evaporator is situated in an exchange body serving for the discharge of combustion gases from the boiler, in connection with this exchange body being provided, upstream of said evaporator, one or more external-air inlets provided with flow-regulation means, characterized in that said installation comprises heat-exchange means able to be inserted in the path followed by the combustion gases coming from said boiler, these means being arranged on the one hand to take up a part of the perceptible heat of these gases, without bringing them to dew point, and before they arrive, possibly mixed with outside air, at the evaporator(s) of said exchange body and, on the other hand, for restoring to the relatively dried and cooled



gases leaving said body the heat previously taken away and thus bringing them to a temperature substantially greater than 0° C., before they finally escape through the chimney, said heat-exchange means being disposed for the part taking heat from smoke leaving the boiler, in a cooling chamber comprising an inlet able to be placed in communication with the boiler and an outlet able to be placed in communication with an inlet of said exchange body which contains the heat-pump evaporator(s) and, for the part restoring heat to said relatively dried and cooled gases leaving said body, in a heating chamber comprising an inlet in communication with the outlet of said exchange body and an outlet in communication with the chimney;

wherein said installation comprises a first by-pass conduit for placing the boiler in direct communication with the chimney, with said chambers and said exchange body being cut out of the circuit, and a second by-pass conduit for placing the boiler in direct communication with said exchange body, with said chambers being similarly cut out of the circuit.

4,452,621

DIRECT COOLING CRYSTALLIZATION

Patrick E. Fowles, Boylestown, and Tsoung Y. Yan, Philadelphia, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 27, 1982, Ser. No. 424,712
Int. Cl.³ E01D *9/02*
U.S. Cl. 62—534 **10 Claims**

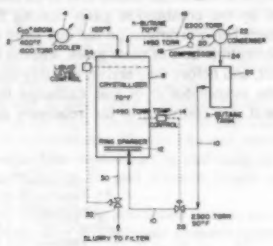
1. A method for operating a crystallization process at minimum initial capital investment and operating costs which comprises:

(a) preselecting crystallization zone pressure and temperature conditions sufficient to provide said minimum capital

investment and operating costs for the crystallization of a crystallizable material,

(b) selecting a direct contact refrigerant based on said crystallization zone pressure and temperature conditions, said direct contact refrigerant being a volatile liquid having a boiling point, at 760 torr, about 0° to about 60° F. below said crystallization zone temperature and a vapor pressure at said crystallization zone temperature about 50 to about 200 torr above said crystallization zone pressure;

(c) introducing a liquid comprising said crystallizable material at a temperature above the crystallization temperature of said material into a crystallization zone maintained under said crystallization zone pressure and temperature



conditions, said pressure and temperature conditions effective to cause crystallization of said crystallizable material,

(d) introducing into the crystallization zone an effective amount of said volatile liquid at about the temperature maintained in said crystallization zone, whereby said volatile liquid vaporizes in said crystallization zone, and said effective amount being sufficient to remove, upon evaporation of said volatile liquid, sufficient heat from the crystallization zone to cause crystallization of said crystallizable material, and

(e) recovering crystallized material from said crystallization zone.

4,452,622

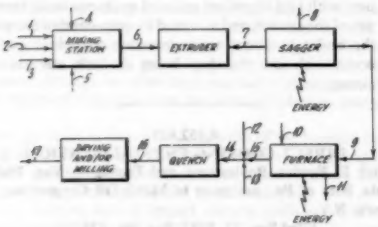
METHOD OF MAKING HIGHLY REACTIVE ION-LEACHABLE GLASS

Harold T. Smyth, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 203,761, Nov. 7, 1980, Pat. No. 4,401,773. This application Mar. 17, 1983, Ser. No. 476,164

Int. Cl.³ C08K *3/40*; A61K *5/00*; C03B *37/06*

U.S. Cl. 65—2 **9 Claims**



1. A method for producing highly reactive ion-leachable glass in cementitious compositions containing proton donating compounds comprising:

blending together a mixture of ion-leachable inorganic compounds;

forming said blended mixture into shaped charges;

heating said shaped charges to form a homogeneous melt;

blowing said melt, in a gaseous medium to form at least partially solidified thin glass fibers having a degree of crystallinity of less than 1% by weight in the crystalline form and grinding the fibers.

4,452,623

METHOD FOR PRODUCING OPTICAL MULTIPLE FIBER

Atsushi Utsumi, Kawanishi, and Masaharu Noguchi, Nishinomiya, both of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

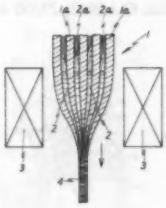
PCT No. PCT/JP81/00185, 371 Date Apr. 27, 1982, 102(e) Date Apr. 27, 1982, PCT Pub. No. WO82/00898, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 24, 1981, Ser. No. 375,263

Claims priority, application Japan, Aug. 28, 1980, 55-119100; Jul. 4, 1981, 56-104769

Int. Cl.³ C03B *37/00, 37/14*

U.S. Cl. 65—3.12 **17 Claims**



1. A method for producing an optical multiple fiber which comprises bundling a multiplicity of silica glass light-conducting elements and drawing the bundle of the light-conducting elements in the state that an intermediary material exists in the molten state among the elements; said intermediary material comprising at least one member selected from the group consisting of glass forming oxides, glass modifying oxides and intermediate oxides, provided that the use of SiO_2 alone as the intermediary material is excluded; and said intermediary material being formed on the surfaces of the previously bundled light-conducting elements, before carrying out the drawing of the bundle, by passing a precursor gas of the intermediary material through the interstices between the elements of the bundle maintained at a high temperature.

4,452,624

METHOD FOR BONDING INSULATOR TO INSULATOR

Henry Wohltjen, Burke, Va., and John F. Giuliani, Kensington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1982, Ser. No. 451,893

Int. Cl.³ C03B *23/20*; C03C *27/04*

U.S. Cl. 65—40 **15 Claims**

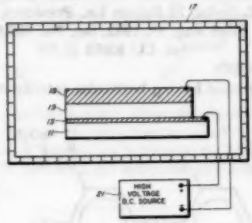
1. A method for making an airtight seal between a pair of insulator elements without destroying any fine structures etched in the insulator elements, comprising the steps of:

(a) coating one of the pair of insulator elements with a thin metal film;

(b) placing the other insulator element and the thin metal film in close surface contact;

(c) heating one of the insulator elements to a temperature below its softening point but high enough to render the heated insulator element sufficiently electrically conductive to pass a finite current; and

(d) passing a finite positive current from the thin metal film to the heated insulator element to consume the thin metal



film and produce an airtight seal between the pair of insulator elements.

4,452,625

SYNERGISTIC COMPOSITIONS FOR INHIBITING PLANT GROWTH

Klaus Lürssen, Bergisch-Gladbach; Graham Holmwood, Wuppertal; Wolfgang Krämer, Wuppertal; Erik Regel, Wuppertal; Wolf Reiser, Wuppertal, and Rolf Schröder, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 7, 1982, Ser. No. 337,648

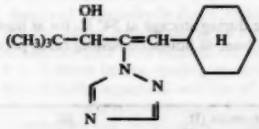
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102588

Int. Cl.³ A01N *43/64, 37/00*

U.S. Cl. 71—76 **6 Claims**

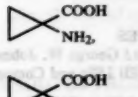
1. A plant growth-regulating composition consisting essentially of a plant growth-inhibiting effective amount of

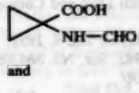
(1)



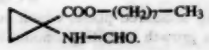
and about 0.5 to 4 times its weight of

(2) a 1-amino-cyclopropane-1-carboxylic acid derivative selected from the group consisting of





and



4,452,626

HERBICIDAL 4-(BENZOTRIAZOL-1-yl)(PHENOXY)ALKANOIC ACIDS, ESTERS AND SALTS

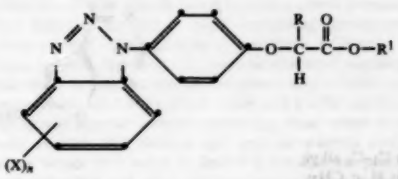
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 20, 1982, Ser. No. 419,860

Int. Cl.³ A01N *43/64*; C07D *249/18*

U.S. Cl. 71—92 **6 Claims**

1. A compound of the formula:



(I)

wherein n is 1 and X is trifluoromethyl R is methyl, ethyl or methoxymethyl; and R^1 is hydrogen, alkyl of from one to four carbon atoms, and, when R^1 is hydrogen, the alkali metal and ammonium ($N(R^3)_3$) salts, wherein each R^2 is hydrogen or alkyl of from one to six carbon atoms.

4,452,627

AGRICULTURAL UREAS AND ISOUREAS

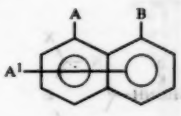
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 184,371, Sep. 15, 1980, Pat. No. 4,370,479, which is a continuation-in-part of Ser. No. 98,724, Nov. 30, 1979, abandoned. This application Sep. 22, 1982, Ser. No. 421,415

Int. Cl.³ A01N *43/54*

U.S. Cl. 71—92 **14 Claims**

1. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of the formula:

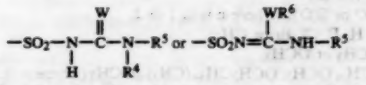


wherein

A^1 is H, F, Cl, Br, CH_3O or NO_2;

A is Cl, F, Br, NO_2, $—CH_3$, $—SO_2NR^1R^2$, $—SO_2N(CH_3)(OCH_3)$, $—S(O)_nR^3$, $—OR^3$, $—OSO_2R^3$ or $—OSO_2CF_3$;

B is



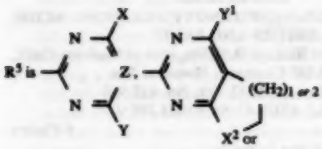
n is 0, 1 or 2;

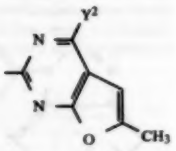
R^1 is C_1–C_4 alkyl;

R^2 is C_1–C_4 alkyl;

R^3 is C_1–C_4 alkyl;

R^4 is H or CH_3;





R^6 is C_1–C_6 alkyl;
R^{10} is H or CH_3;
R^{11} is C_1–C_3 alkyl;
W is O or S;
X is CH_3, CH_3O or CH_3CH_2O;
X^2 is O or CH_2;
Y is H, C_1–C_3 alkyl, CH_3OCH_2, $CH_3CH_2OCH_2$, OCH_2CO_2—(H or C_1–C_2 alkyl), $OCH(CH_3)CO_2$(H or C_1–C_2 alkyl), O—(C_1–C_3 alkyl), O—(C_3–C_4 alkenyl) or $NR^{10}R^{11}$;
Y^1 is H, CH_3 or OCH_3;
Y^2 is H or CH_3; and
Z is CH or CCH_3;
and their agriculturally suitable salts, and at least one of the following: surfactant, solid or liquid diluent.

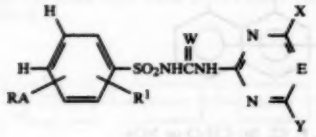
4,452,628

HERBICIDAL SULFONAMIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 60,869, Jul. 26, 1979, abandoned. This application May 30, 1980, Ser. No. 152,021
Int. Cl.³ C07D *251/46, 251/16*; A01N *43/66*
U.S. Cl. 71—93 **22 Claims**

1. A compound selected from



wherein
W is O or S;
R is CHF_2, CF_3, CH_2CH_3 or CH_2CHFG, where G is F, Cl, CF_3 or Br;
A is O or $S(O)_n$, where n is 0, 1 or 2;
R^1 is H, F, Cl, Br or CH_3;
X is CH_3 or OCH_3;
Y is CH_3, OCH_3, OCH_2CH_3, $(CH_2)_mOCH_3$ (where m is 1 or 2), $OCH_2CH_2OCH_3$, or $OCHR^2CO_2R^3$, where R^2 is H or CH_3 and R^3 is CH_3 or C_2H_5; and
E is N and agriculturally suitable salts thereof.

14. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound of claim 1.

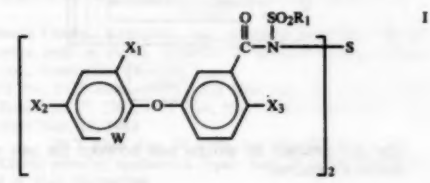
4,452,629

HERBICIDAL N,N'-THIO-5(SUBSTITUTED-PHENOXY OR -PYRIDYLOXY)-2-SUBSTITUTED BENZOIC ACID SULFONAMIDES AND SULFAMIDOYL FLUORIDE

El-Ahmadi I. Heiba, 11 Balsam La., Princeton, N.J. 08540

Filed Aug. 19, 1982, Ser. No. 409,615
Int. Cl.³ E05B *63/00*
U.S. Cl. 71—103 **9 Claims**

1. A compound having herbicidal activity of the formula



I

wherein
R_1 is F; a C_1–C_4 alkyl group optionally substituted by one or more halogen atoms; or a phenyl group optionally substituted by one or more halogen atoms;
W is CH, C-halogen or N;
X_1, X_2 and X_3 are each a halogen atom, a C_1–C_4 alkyl group, a trifluoromethyl group, a nitro group or a cyano group.

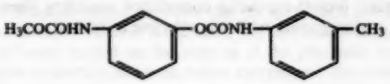
4,452,630

STABLE, HEAT-RESISTANT SOLUTIONS OF PESTICIDAL CARBAMATES

Anacleto Dal Moro, and Franco Pinamonti, both of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 172,296, Jul. 25, 1980, abandoned. This application Nov. 17, 1981, Ser. No. 322,202
Claims priority, application Italy, Jul. 27, 1979, 24733 A/79
Int. Cl.³ A01N *25/22*
U.S. Cl. 71—111 **9 Claims**

1. A solution of the herbicide carbamate of formula



(I)

which solution is stable during storage at 54° C. for at least 14 days and at 0° C. for at least 48 hours, consisting of, in percent by weight:

compound of formula (I)	40
dimethylformamide (DMF)	30
xylol	30.

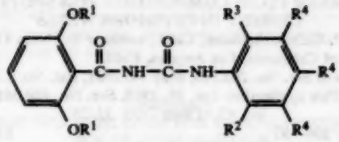
4,452,631

UREA HERBICIDES

Kenneth W. Burow, Jr., Indianapolis, and George W. Johnson, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 280,743, Jul. 6, 1981, abandoned. This application Apr. 8, 1982, Ser. No. 366,884
Int. Cl.³ A01N *47/30*
U.S. Cl. 71—120 **6 Claims**

1. A method for controlling undesired plants which comprises applying to the plants a growth inhibiting amount of a compound of the formula



wherein both R^1 groups are the same and represent methyl; both R^2 and R^3 represent the same moiety which is methoxy or chlorine, and each R^4 represents hydrogen; or R^2 and R^3 both represent fluorine, and each R^4 independently represents hydrogen or fluorine.

4,452,632

METHOD FOR THE APPLICATION OF TRIACONTANOL TO SOYBEANS TO ACHIEVE A SUBSTANTIAL INCREASE IN YIELD

Donald O. Nickey, Akron, and Dane K. Parker, Massillon, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 18, 1982, Ser. No. 434,798
Int. Cl.³ A01N *31/02, 59/08*
U.S. Cl. 71—122 **2 Claims**

1. A method for increasing soybean crop yield that comprises applying to the foliage of soybean plants small amounts of 1-triacontanol, wherein the 1-triacontanol is prepared by:

(a) reacting cyclododecanone with morpholine in the presence of a catalyst to form 1-morpholino-1-cyclododecene;

(b) separating the 1-morpholino-1-cyclododecene and reacting it with stearoyl chloride in the presence of a tertiary amine in an organic solvent while maintaining the reaction temperature of 0°–10° C. followed by;

(c) hydrolysis under acidic conditions, thereafter

(d) separating the 2-n-hexadecyl-cyclotetradecanedione, reacting with a solution of alkali metal hydroxide in diethylene glycol at 90°–110° C. followed by

(e) addition of hydrazine hydrate and refluxing the reaction mixture at 125°–135° C., thereafter removing

(f) the distillate until the temperature of the reaction mixture climbs to 190°–210° C. then refluxing for 3 to 20 hours with slow stirring, and then

(g) cooling to 110°–125° C. followed by addition of hot (80°–95° C.) water with rapid stirring followed by

(h) neutralization with aqueous acid to a pH of 2 to yield triacontanoic acid which is separated and purified by recrystallization which is then

(i) dissolved in tetrahydrofuran under an inert atmosphere and has added thereto the reducing agent, borane-methyl sulfide complex with stirring and heated to 40°–45° C. for 2 to 3 hours before cooling to ambient temperature followed by the sequential addition of methanol and water to quench excess borane reagent followed by

(k) separation and purification of the triacontanol; said 1-triacontanol is in an aqueous spray, wherein said spray comprises (1) 0.0001 g to 1 g of 1-triacontanol per cubic meter of water, (2) at least 75 grams of calcium chloride per cubic meter of water, and (3) at a pH of at least 10 but less than 12; said aqueous spray being applied at least twice to the foliage of the soybeans at a rate of at least 1.5×10^{-5} m^3 of spray solution per square meter.

4,452,633

METHOD FOR PRODUCING COBALT METAL POWDER

Michael J. Miller; Richard A. Scheithauer; Clarence D. Vanderpool, all of Towanda, and Eric F. Husted, Ulster, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 31, 1983, Ser. No. 547,181
Int. Cl.³ B22F *9/20*
U.S. Cl. 75—0.5 A **1 Claim**

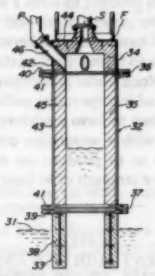
1. A process recovering silver values and producing fine particle size cobalt metal powder and from scrap material comprising cobalt and silver, said process comprising digesting said scrap material in aqueous hydrochloric acid to produce an aqueous acid cobalt chloride solution containing silver ions, contacting said aqueous acid cobalt chloride solution at a pH of from about 2 to about 4 with a sufficient amount of iron metal to result in the cementation of said silver ions with said iron to form an insoluble mixture comprising iron and silver and a resulting aqueous acid cobalt chloride solution, separating said insoluble mixture from said resulting aqueous acid cobalt chloride solution, complexing cobalt present in said aqueous cobalt chloride solution with ammonia to form a cobalt ammine chloride solution, forming a cobalt containing precipitate, and reducing said cobalt containing precipitate to form a cobalt metal powder, digesting said insoluble mixture comprising iron and silver in concentrated hydrochloric acid to form an aqueous solution containing silver values and a solid residue, separating said aqueous solution containing silver values from said solid residue, and diluting said aqueous solution containing silver values with water to form a silver chloride precipitate, and separating said silver chloride precipitate to recover said silver values.

4,452,634

METHOD OF STIRRING MOLTEN METAL AND REFRACTORY CYLINDER FOR THE PURPOSE

Yukio Oguchi; Norio Sumida; Tetsuya Fujii; Toshihiko Emi, all of Chiba; Toshio Fujimura, and Arata Ueda, both of Kurashiki, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Oct. 29, 1982, Ser. No. 437,514
Claims priority, application Japan, Jul. 20, 1982, 57-126284; Jul. 20, 1982, 57-126285; Jul. 20, 1982, 57-126286; Jul. 20, 1982, 57-126287
Int. Cl.³ C22B *9/00*
U.S. Cl. 75—93 R **9 Claims**



1. A method of stirring molten metal by repeated sucking and rapidly discharging part of said molten metal into and out of a refractory cylinder having a lower opening end immersed in said molten in a ladle, comprising operating the stirring under a condition wherein an inner diameter (d) of said refractory cylinder is less than 1,000 mm, a relation between the inner diameter (d, mm) of said refractory cylinder and weight (W, ton) of said molten metal in said ladle is $d/W^{0.5}>30$, and an immersed depth of said refractory cylinder is within 200–700 mm.

4,452,635

HYDRAULIC CEMENT COMPOSITION

Yoshibumi Noshi, Sakura; Hiroyuki Naito, Tokyo; Kiyoshi Takai, and Masaaki Sugawara, both of Tsuruoka, all of Japan, assignors to Mizusawa Industrial Chemicals Ltd., Osaka, Japan

Filed Feb. 28, 1983, Ser. No. 470,550
Claims priority, application Japan, Mar. 3, 1982, 57-32277
Int. Cl.³ C04B 19/04
U.S. Cl. 106—74 11 Claims

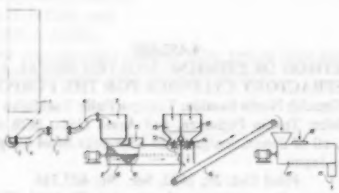
1. A hydraulic cement composition comprising (A) a water-soluble alkali metal borosilicate or a combination of a water-soluble alkali metal silicate and an alkali metal borate soluble in an alkaline aqueous solution, (B) silicon polyphosphate, (C) an alkali metal silicofluoride and (D) substantially amorphous barium silicate in which the BaO/SiO_2 molar ratio is in the range of from 1/2.5 to 1/6.

4,452,636

BUILDING ELEMENTS CONTAINING CEMENT AND SPHERES OF EXPANDED, POROUS FOAMED RESIN

Dirk Laan, Beeldhouwerstraat 17, 6824 Arnhem, Netherlands

PCT No. PCT/NL80/00024, 371 Date Mar. 3, 1981, 102(e) Date Mar. 3, 1981, PCT Pub. No. WO81/00104, PCT Pub. Date Jan. 22, 1981
PCT Filed Jul. 2, 1980, Ser. No. 253,760
Int. Cl.³ C09J 1/02
U.S. Cl. 106—76 6 Claims



1. In a method for manufacturing a building block comprising the steps of uniformly coating spheres of porous, expanded resinous foam material with a bonding agent consisting essentially of a bituminous product to form a sticky blend; mixing a quantity of particulate material with said blend to form a mass consisting mainly of loose coated spheres; mixing cement and water with said mass to form a final mixture; compressing said final mixture into block form and drying, the improvement comprising the step of incorporating sufficient waterglass into the bituminous product to form a mixture of bituminous product and waterglass with a waterglass content of at the most 75% by weight, so as to produce an odorless, dried block having a compressive strength of at least 40 kg/cm^3.

4,452,637

EXPANSIVE CEMENT ADDITIVE AND CEMENTITIOUS MATERIAL ADDED THEREWITH

Yuichi Suzukawa; Waichi Kobayashi; Shigeo Okabayashi, and Hidefumi Ichinose, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jan. 13, 1983, Ser. No. 457,683
Claims priority, application Japan, Jan. 18, 1982, 57-4940
Int. Cl.³ C04B 7/35
U.S. Cl. 106—89 11 Claims

1. An expansive cement additive consisting of a pulverized product of clinker containing 15~60% by weight of free CaO, 5~30% by weight of free CaF_2, 30~80% by weight of $11CaO.7Al_2O_3.CaF_2$, and less than 10% by weight of other ingredients.

4,452,638

MARKER FLUID COMPOSITION FOR SPOTTING CEMENT IN OFFSHORE WELLS

Julius P. Gallus, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 263,510, May 14, 1981, Pat. No. 4,391,329.
This application Apr. 28, 1983, Ser. No. 489,361
Int. Cl.³ C04B 7/35, 31/28
U.S. Cl. 106—97 10 Claims

1. A marker fluid composition for use in positioning a cement slurry in the annulus between a borehole and casing in an offshore well comprising:

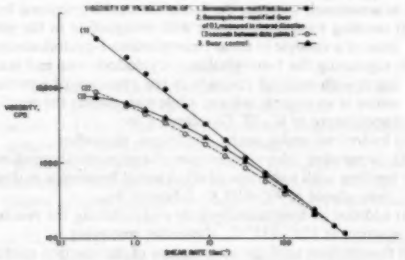
(a) 100 parts by weight cement,
(b) about 35 to 56 parts by weight water,
(c) about 5 to 8 parts by weight particulate carbon black,
(d) about 4 to 6.4 parts by weight coal dust, and
(e) about 0.52 to 0.84 parts by weight surface active agent.

4,452,639

BENZOQUINONE ETHER ADDUCT OF POLYGALACTOMANNAN GUM

Rachel S. Kohn, Springfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,715
Int. Cl.³ C08L 5/00; C08G 59/40
U.S. Cl. 106—205 20 Claims



1. A process for increasing the viscosity of an aqueous solution of polygalactomannan gum having a pH of at least about 6.0, which comprises adding between about 0.1–10 weight percent, based on the weight of polygalactomannan gum, of benzoquinone to the aqueous solution.

4,452,640

QUANTITATIVE HYDROLYSIS OF CELLULOSE TO GLUCOSE USING ZINC CHLORIDE

Li Fu Chen, West Lafayette, Ind., and Che-Ming Yang, Clark, N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 11, 1982, Ser. No. 377,077
Int. Cl.³ C13K 1/02
U.S. Cl. 127—37 9 Claims

1. A process for the quantitative hydrolysis of cellulose to glucose, without degradation of the glucose to hydroxymethyl furfural, which process comprises the steps of:

(a) forming a mixture of cellulose solids together with zinc chloride, said zinc chloride being in the form of an aqueous solution containing from about 60 to about 80% by weight of zinc chloride;
(b) heating the mixture formed in step (a) at a temperature of from about 70° to about 180° C. for a period of time sufficient to convert the cellulose to a liquid form without appreciable formation of glucose;
(c) reducing the concentration of the zinc chloride in the mixture without crystallizing the cellulose by the addition of water or dilute acid;

(d) completely hydrolyzing the liquid cellulose to glucose at a pH of 2 or less with acid,

whereby the cellulose is quantitatively converted to glucose without degradation, and thereafter separating the glucose from the mixture.

4,452,641

METHOD FOR REDUCING THE LIQUID CONTENT OF SUGAR CANE BAGASSE

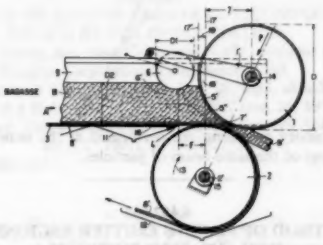
Willy Kaether, c/o BMA, P.O. Box 32 25, 33 Braunschweig, Fed. Rep. of Germany

Continuation of Ser. No. 267,246, May 26, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 513,256

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021311

Int. Cl.³ C13D *1/02*

U.S. Cl. 127—43 **12 Claims**



1. A method for reducing the liquid content of sugar cane bagasse, which has passed a diffuser for desugarizing, said method comprising the following steps:

(a) leading the bagasse as it exits from the diffuser at a bagasse travelling speed corresponding approximately to the exit speed of the bagasse from the diffuser said bagasse being in its compact diffuser exiting state and said bagasse being led from said diffuser into a liquid reducing apparatus through a feed advance path including an open screenless section (F),

(b) causing in a first zone (6') of the feed advance path through which zone the bagasse passes during a first time period (t_1), a preliminary liquid removal from the advancing, compacted bagasse, by slightly further compacting the bagasse in said first zone (6') substantially adjacent to but still upstream of said open screenless path section (F) as viewed in the direction of feed advance, said first zone (6') having a first constant length whereby said first time period (t_1) is defined as:

t_1=(said first constant length)/(said given bagasse travelling speed),

and whereby said liquid so removed from the bagasse passes substantially through said open screenless section (F),

(c) causing in a second pressure increasing zone (5') through which the bagasse passed during a second time period (t_2), an initial squeezing-out of liquid from the bagasse downstream of said first zone (6') and substantially above said open screenless path section (F) for increasing an initial squeezing-out pressure to about 0.2 to 0.3 kg/cm² in said second zone (5'), said second zone (5') having a second constant length whereby said second time period (t_2) is defined as:

t_2=(said second constant length)/(said given bagasse travelling speed),

(d) causing in a third pressure increasing zone (7') through which the bagasse passes during a third time period (t_3), a final squeezing-out of liquid from the bagasse downstream of said open screenless path section (F) thereby providing a final squeezing-out pressure (p) in said third zone (7') formed by at least one squeezing roller (1) having a diameter (D) such that the final squeezing-out pressure (p) in said third zone (7') is larger than 0.0018 times (D), whereby (p) is taken in kg/cm² and (D) is taken in millimeter, said third zone (7') having a third constant length whereby said third time period (t_3) is defined as:

t_3=(said third constant length)/(said given bagasse travelling speed),

(e) selecting and providing the advancing speed of the bagasse so that the total time ($t=t_1+t_2+t_3$) of pressure application in said first (6'), second (5'), and third (7') zones satisfies the relationship $t>(D)/K$ wherein K is a constant, (D) is said diameter of the squeezing roller (1) in mm and t is in seconds; and

(f) bending said stream of bagasse during its passage through said zones first downwardly and then upwardly to induce shearing forces within the bagasse for shifting bagasse particles relative to one another substantially in a feed direction or an opposite direction.

4,452,642

CLEANING OF METALLIC SURFACES WITH HYDROGEN UNDER VACUUM

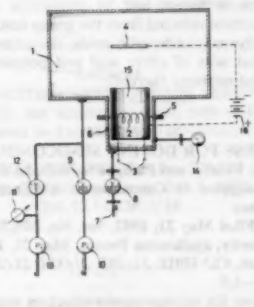
Karl J. Dietz, and François Waelbroeck, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 841,468, Oct. 12, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,831

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647288

Int. Cl.³ B08B *5/04*

U.S. Cl. 134—1 **7 Claims**



1. A method of cleaning surfaces, especially metallic surfaces, comprising the steps of:

heating the surface to be cleaned in a vacuum vessel to a temperature between 100° and 250° C.;

passing a stream of molecular hydrogen through the vacuum vessel so as to expose said surface thereto while maintaining the hydrogen gas pressure in said vessel at a value between a minimum pressure at which the mean free path of molecular hydrogen in the vessel is equal to the smallest spacing between the surface to be cleaned and the opposite wall of the vessel and a maximum pressure corresponding to a value that keeps the recombination of hydrogen atoms into hydrogen molecules at a negligible level;

converting at least part of the hydrogen molecules in said vessel into hydrogen atoms, thereby causing a subsequent chemical reaction of said hydrogen atoms with contami-

nations of said surface to produce gaseous reaction products; and

pumping said reaction products out of said vessel with a vacuum pump.

2. A method of cleaning surfaces, especially metallic surfaces, comprising the steps of:

heating the surface to be cleaned in a vacuum vessel to a temperature between 100° and 250° C.;

passing a stream of molecular hydrogen through the vacuum vessel so as to expose said surface thereto while maintaining the hydrogen gas pressure in said vessel at a value between 10^{-3} and 100 mbar, while said surface is spaced by at least 2 cm from the opposite wall of said vessel;

converting at least part of the hydrogen molecules in said vessel into hydrogen atoms, thereby causing a subsequent chemical reaction of said hydrogen atoms with contaminations of said surface to produce gaseous reaction products; and

pumping said reaction products out of said vessel with a vacuum pump.

4,452,643

METHOD OF REMOVING COPPER AND COPPER OXIDE FROM A FERROUS METAL SURFACE

Larry D. Martin, Al Khobar, Saudi Arabia, and Gary W. Bradley, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 12, 1983, Ser. No. 457,342

Int. Cl.³ C23G *1/08*

U.S. Cl. 134—3 **18 Claims**

1. A method of removing copper and copper oxide from a ferrous metal surface comprising: contacting said copper and copper oxide with an aqueous composition having a pH of from about 3.0 to about 6.0 said composition consisting essentially of:

(a) an oxidizing agent which is stable at a pH of about 3.0 to about 6.0;

(b) a compound selected from the group consisting of oxalic acid, the alkali metal and ammonium salts of oxalic acid and mixtures thereof; and,

(c) an ingredient selected from the group consisting of citric acid, polyaminocarboxylic acids, the ammonium and alkali metal salts of citric acid and polyaminocarboxylic acids, and mixtures thereof.

4,452,644

PROCESS FOR DOPING SEMICONDUCTORS

Michel Bruel, Veurey, and Philippe Spinelli, La Tronche, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 21, 1982, Ser. No. 380,709

Claims priority, application France, May 21, 1981, 81 10132

Int. Cl.³ H01L *21/265, 21/324, 21/263*

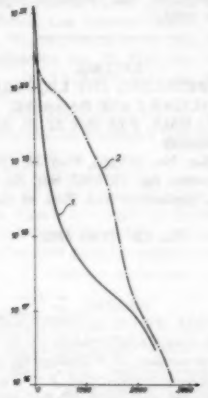
U.S. Cl. 148—1.5 **8 Claims**

1. A process for doping semiconductors consisting in implanting dopant particles in a substrate an in rendering them electrically active, so as to modify the physical properties of the substrate, comprising the steps of:

effecting an implantation by recoil of the dopant particles in the substrate, which consists in depositing on the surface of the substrate a layer of material containing dopant particles, and in bombarding said layer by means of a beam of bombarding particles, so as to cause the dopant particles to penetrate in the substrate;

eliminating the layer of material deposited on the surface of the substrate;

effecting transitory annealing, which consists in bringing to the surface, or to the level of the first implanted layers, for a very short length of time, an energy density such that very high temperatures are reached, so as to produce a local liquefaction of the first layers of the substrate, wherein the bombardment of the layer of material containing the doping particles deposited on the surface of the substrate, the elimination of the doping layer, after penetration of the doping particles into the substrate, and the



transitory annealing are performed at the same time by means of the same beam of particles.

4,452,645

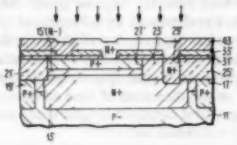
METHOD OF MAKING EMITTER REGIONS BY IMPLANTATION THROUGH A NON-MONOCRYSTALLINE LAYER

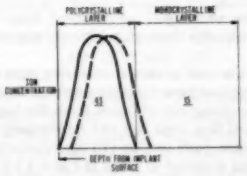
Wei-Kan Chu, Poughkeepsie; Ingrid E. Magdo, Hopewell Junction, and Hans S. Rupprecht, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 93,666, Nov. 13, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 242,961

Int. Cl.³ H01L *21/265, 21/225*

U.S. Cl. 148—1.5 **11 Claims**





1. A method for forming an emitter region of a transistor comprising:

forming a subcollector region in a semiconductor substrate,

depositing an epitaxial layer on said semiconductor substrate,

forming a base region in said epitaxial layer of a conductivity type opposite that of the conductivity type of said subcollector,

depositing a layer of non-monocrystalline silicon on said epitaxial layer, at least a portion of said non-monocrystalline silicon forming a precursor for an emitter region which is adjacent to and at least partially vertically displaced from said base region,

bombarding said emitter precursor with ions of a conductivity type that is the same as the conductivity type of said subcollector at a dosage and energy sufficient to displace at least a portion of the Gaussian distribution of said ions across the interface between said non-monocrystalline layer and said epitaxial layer, and

annealing the structure so as to drive said ions into said base region and to convert said non-monocrystalline silicon of said emitter precursor into a monocrystalline silicon emitter region.

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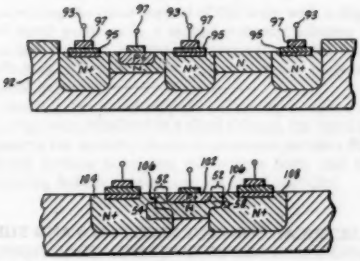
METHOD OF MAKING PLANAR III-V COMPOUND DEVICE BY ION IMPLANTATION

Rainer R. Zuleeg, San Juan Capistrano, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 306,509, Sep. 28, 1981, abandoned, which is a division of Ser. No. 973,743, Dec. 26, 1978, abandoned. This application Feb. 7, 1983, Ser. No. 464,604

Int. Cl.³ H01L *21/263, 21/26*

U.S. Cl. 148—1.5 **6 Claims**



1. A process for fabricating a planar III-V compound semiconductor device comprising:

a. forming a first mask on a surface of the semiconductor material to expose selected first areas of the material;

b. implanting first ions selected from the group consisting of selenium and other N-type donor ions into the first areas by ion implantation at sufficient accelerating energies and concentrations to form N+ regions in the GaAs material beneath the first areas wherein the implantation comprises at least two separate implantations such that the resulting concentration of the first ions in the material decreases with increasing depth beneath the surface of the material;

c. removing a portion of the first mask to expose the surface of the material between at least two adjacent implanted first areas;

d. implanting further first ions in the exposed channel region of step (c) and in the first areas such that the resulting ion concentration in the channel region is lower than the ion concentration in the adjacent first areas and at a shallower depth than the implanted ion regions in the adjacent first areas, such that the temperature of the semiconductor material during the ion implantation steps (b) and (d) is held at a temperature of approximately 300° C.;

e. annealing the material; and

f. forming suitable electrical contacts on at least a portion of at least two adjacent first areas now connected by the implanted channel region.

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HARD-SURFACED CAST IRON ARTICLES AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

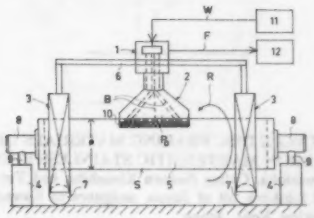
Väinö Sallas, Vaajakoski, Finland, assignor to Valmet Oy, Finland

Filed Jul. 6, 1981, Ser. No. 280,344

Claims priority, application Finland, Jul. 7, 1980, 802179

Int. Cl.³ C21D *5/02*

U.S. Cl. 148—3 **3 Claims**



1. A method for manufacturing hard-surfaced cast iron rolls, comprising the steps of:

casting the roll and cooling the same in a manner such that, upon completion of said cooling, the crystal structure of the roll is that of grey cast iron;

machining the roll substantially to its final dimension;

mounting the roll for rotation about an axis of rotation;

remelting the roll surface to be treated by directing at least one electron beam onto zones of the roll surface to be treated and rotatably displacing the roll and axially displacing the electron beam relative to each other to direct the at least one electron beam onto different remelting zones in a punctiform manner;

cooling the treated roll surface; and

machining the roll to its final dimensions and surface smoothness subsequent to said remelting and cooling steps.

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LOW IN REACTOR CREEP ZR-BASE ALLOY TUBES

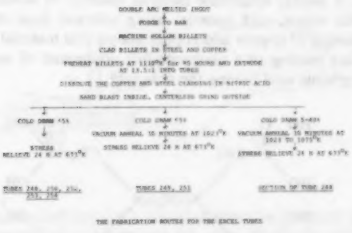
Brian A. Cheadle, and Richard A. Holt, both of Deep River, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Jun. 29, 1981, Ser. No. 278,824

Claims priority, application Canada, Jul. 8, 1980, 335707

Int. Cl.³ C22F *1/18*

U.S. Cl. 148—11.5 F **6 Claims**



1. A method of fabricating an extruded product from an alloy consisting essentially of Sn 2.5–4%, Mo 0.5–1.5%, Nb 0.5–1.5%, 0 800–1300 ppm, balance Zr and incidental impurities wherein a billet of said alloy is preheated in the temperature range 900°–1200° K. and extruded into said product at an extrusion ratio between 4:1 and 15:1 and said extruded product

is cold worked by a selected amount of less than 5% and stress relieved at a selected temperature in the range 650°–800° K., the amount of cold working and heat treatment temperature being selected so as to produce a product having a fine grain size, a crystallographic texture with a predominance of basal plane normals in the radial transverse plane, a dislocation density of less than about $5\times10^{14}m-^{2}$ a minimum U.T.S. of 479 PMa, a maximum axial elongation less than 1.5% and a maximum diametral expansion less than 2.5% under conditions equivalent to 30 years service in a CANDU-PHW 600 MW reactor.

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MOTORCYCLE DISC BRAKING MATERIALS OF A LOW CARBON MARTENSITIC STAINLESS STEEL

Keiichi Yoshioka, Chiba; Noboru Kinoshita, and Yutaka Ono, both of Ichihara, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP82/00210, 371 Date Dec. 3, 1982, 102(e) Date Dec. 3, 1982, PCT Pub. No. WO82/04268, PCT Pub. Date Dec. 9, 1982

PCT Filed May 28, 1982, Ser. No. 448,901

Claims priority, application Japan, May 30, 1981, 56/83132

Int. Cl.³ C22C *38/40*

U.S. Cl. 148—37 1 Claim

1. A motorcycle braking disc made of a low carbon martensitic stainless steel consisting of, by weight percent, 0.04–0.10% of C+N, not greater than 0.5% of Si, 1.0–2.5% of Mn, not greater than 0.5% of Ni, not greater than 0.5% of Cu, 10.0–14.5% of Cr, and the remainder being substantially Fe, wherein said martensitic stainless steel material has been subjected to a quenching thermal treatment at a single phase temperature range without affecting the tempering treatment.

4,452,650

COPPER AND COPPER ALLOY COATING

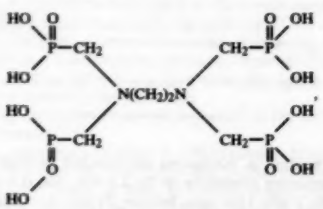
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 200,282, Oct. 24, 1980, abandoned, which is a division of Ser. No. 111,207, Jan. 11, 1980, Pat. No. 4,264,379. This application Feb. 25, 1982, Ser. No. 352,449

Int. Cl.³ C23F *7/12*

U.S. Cl. 148—31.5 4 Claims

1. A readily solderable material resistant to tarnishing in a sulfide vapor, said material being selected from the group consisting of copper and copper alloys, said material having a surface coating of a chromate-free compound of an organophosphonic acid having the structure



said surface coating comprising a thin, invisible and substantially pore-free layer.

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ELECTRICAL CONTACT MATERIALS AND THEIR PRODUCTION METHOD

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo K.K., Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,244

Int. Cl.³ C22C *5/06*

U.S. Cl. 148—431 3 Claims

1. A method of preparing an electrical contact material, which comprises:

preparing a powder mixture of silver powders and powders of metal oxides, the metal oxides including tin oxides and/or tin alloy oxides and being 4–25 weight % of the total powder mixture,

molding and sintering said powder mixture to a compact at a temperature lower than the melting temperature of silver, and

heating said compact under normal atmospheric conditions, to a temperature greater than the melting temperature of silver thereby to have the silver powders in the compact melt and absorb atmospheric oxygen thereinto so as to produce therein a high partial pressure which prevents the metal oxides from migrating into the molten silver and also prevents them from converting to lower oxides on account of their transfer of oxygen into the silver, the atmospheric oxygen absorbed by the silver being exhausted therefrom with impurities contained therein upon the cooling of the compact.

4,452,652

ELECTRICAL CONTACT MATERIALS AND THEIR PRODUCTION METHOD

Akira Shibata, 298-45, Takada-cho, Kohoku-ku, Yokohama, Japan

Continuation-in-part of Ser. No. 396,244, Jul. 8, 1982. This application Dec. 29, 1982, Ser. No. 454,192

Int. Cl.³ C22C *5/06*

U.S. Cl. 148—431 3 Claims

1. A method of preparing an electrical contact material, which comprises:

preparing a powder mixture of silver powders and powders of metal ozides, the metal oxides including tin oxides and/or tin alloy oxides and being 4–25 weight % of the total powder mixture,

molding and sintering said powder mixture to a compact at a temperature lower than the melting temperature of silver,

heating said compact under normal atmospheric conditions, to a temperature greater than the melting temperature of silver thereby to have the silver powders in the compact melt and absorb atmospheric oxygen thereinto so as to produce therein a high partial pressure which prevents the metal oxides from migrating into the molten silver and also prevents them from converting to lower oxides on account of their transfer of oxygen into the silver, the atmospheric oxygen absorbed by the silver being exhausted therefrom with impurities contained therein upon the cooling of the compact,

and

pressing said heated compact between an anvil and a punch under a pressure of 1–1.5 tons/cm^2.

4,452,653

METHOD OF COATING AMMUNITION WITH A PROTECTIVE SURFACE LAYER

Manfred Lübben, Celle, and Wolfram Witt, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Division of Ser. No. 112,110, Jan. 17, 1980, Pat. No. 4,363,273, which is a continuation-in-part of Ser. No. 885,323, Mar. 10, 1978, abandoned. This application Dec. 2, 1981, Ser. No. 326,919
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1977, 2710451
Int. Cl.³ C06B 45/22
U.S. Cl. 149—11 10 Claims

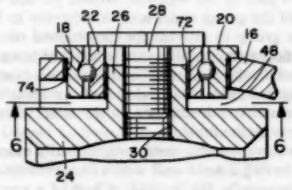
1. A process for producing an improved ammunition having a surface coating with at least one layer of lacquer, comprising:
(a) the steps of preparing a highly porous nitrocellulose body;
(b) permeating the highly porous nitrocellulose body with a first polymer which is dispersed in a first solvent;
(c) substantially removing the first solvent;
(d) covering the outer surface of the body with a dispersion of metal particles in a second polymer solution with a second solution solvent permeating into the body for effecting a firm bond between the porous body and the metal particles;
(e) covering the metal particle surface layer with a rapidly curing resin dissolved in a third solvent, the third solvent causing the second polymer to permeate partially from the metal particle layer into the porous body and thereby creating hollow spaces near the metal particles.

4,452,654

METHOD OF ASSEMBLING A GYROSCOPE GIMBAL FIXTURE

Charles W. KaDell, Jr., Fullerton, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed May 28, 1982, Ser. No. 383,373
Int. Cl.³ B32B 7/04
U.S. Cl. 156—91 16 Claims



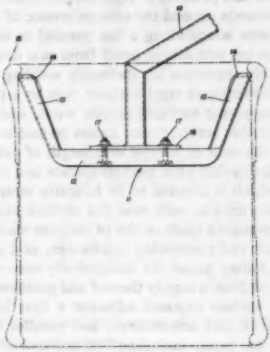
1. A method of shimless assembly of a gyroscope gimbal, comprising the steps of:
assembling a gimbal on its support structure,
engaging and holding said support structure with first fixture means,
aligning the axes of said gimbal in relation to said support by engaging and holding said gimbal with second fixture means, and
securing the components of said gimbal in its aligned position on its support structure by means of applying a high-strength adhesive to the coacting support surfaces thereof.

4,452,655

TIRE HOLDING DEVICE AND USE THEREOF

Reginald B. Pollard, Albany, Ga., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 12, 1982, Ser. No. 441,201
Int. Cl.³ B29H 17/02
U.S. Cl. 156—126 8 Claims



1. An apparatus for holding a green tire carcass in a vertical orientation having at least one bead area, comprising:
(a) base means; and
(b) flexible protruding upward lip means affixed to said base means and adapted to engage the bead area of said green tire carcass.

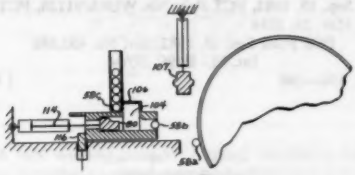
7. A method for applying a green tire carcass to a holding means adapted to engage the bead area of said carcass and having at least two upward protrusions adapted for engagement of said bead area, the steps comprising:
(a) engaging the bead area of said carcass with said protrusions;
(b) displacing said carcass upwardly in order to place said bead area above said protrusions; and
(c) placing said bead area on said protrusions.

4,452,656

METHOD AND APPARATUS FOR MAKING PLASTIC SCREEN PANELS

Henry E. Benson, Long Lake, and Raymond A. Koehler, Anoka, both of Minn., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1982, Ser. No. 407,970
Int. Cl.³ B07B 1/46; B32B 1/00; B31C 13/00
U.S. Cl. 156—174 5 Claims



1. A method of forming a slotted thermoplastic screen panel having tapered slots comprising the steps of helically winding a strand of profiled surface wire having a flat elastomeric working surface and converging side surfaces at a uniform pitch greater than the width of the wire about a smooth-surfaced drum in a plurality of wraps, said winding being done under tension and with said elastomeric flat wire surface in engagement with said drum; fixing the ends of said strand of wire relative to said drum to maintain tension in said strand;

heating one longitudinal side surface of the first of a plurality of thermoplastic-surfaced rigid support rods and a longitudinal strip segment of the wire wraps on the drum surface where said first support rod is to be welded, to a softened state; forcing the heated side surface of said support rod into engagement with said strip segment and holding it until fusion takes place; indexing the drum and repeating said heating and forcing steps until the remainder of said plurality of rigid support rods are welded at spaced increments around the circumference of said drum; severing said wire wraps along a line parallel to said support rods; and removing said screen panel from said drum.

3. An assembly apparatus for thermally welding a plurality of thermoplastic-surfaced rigid support rods to a plurality of extruded thermoplastic-surfaced profile wires, said apparatus including a rotatable screen drum; means on said screen drum for anchoring the ends of at least one length of extruded surface profile wire having a flat bottom surface and tapered side surfaces and which is adapted to be helically wrapped about the drum under tension with said flat surface engaging the drum so as to provide a space or slot of uniform width between wraps; a support rod positioning mechanism, said positioning mechanism including means for successively removing a first rigid support rod from a supply thereof and positioning it with a longitudinal surface exposed adjacent a first longitudinal surface portion of said screen drum and parallel to the axis thereof; heater bar means including first and second longitudinal heated portions mounted for movement into and out of a heating position between said exposed longitudinal surface of said first support rod and said first longitudinal surface portion of said screen drum; means for forcing the exposed longitudinal surface of said first support rod into engagement with said first heated portion of said heater bar means in the heating position thereof while the second heated portion of said heater bar means is forced into engagement with said first longitudinal surface portion of said screen drum; means to retract said heater bar means from its heating position to its inoperative position; means operative when the heater bar means is in its inoperative position to force the exposed longitudinal portion of said first support rod into said first longitudinal surface portion of said screen drum means and maintain it in pressure contact until said first support rod is fused in welded relationship to a plurality of screen wire wraps which overlie the screen drum; and means to index said screen drum so that second and additional support rods can be fused to the screen wire wraps at a plurality of locations around the screen drum.

4,452,657

COMPOSITE INTEGRAL WEB STIFFENING METHOD

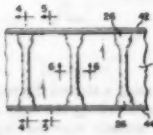
Robert A. Hamm, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01248, 371 Date Sep. 15, 1982, 102(e) Date Sep. 15, 1982, PCT Pub. No. WO84/01128, PCT Pub. Date Mar. 29, 1984

PCT Filed Sep. 15, 1982, Ser. No. 432,886

Int. Cl.³ B29C *17/04*

U.S. Cl. 156—198 **1 Claim**



1. A method of manufacturing and stiffening graphite epoxy web structures into a load-carrying beam support structure for aeronautical vehicles having at least one hat section and a web structure comprising the steps of:

a. providing a web structure consisting of two adjacent web sheets of composite material;

b. forming at least one hat section;

c. cutting a tube substantially as long as the portion of the web to be stiffened;

d. flattening at least one end of the tube;

e. inserting the flattened end of the tube between the web sheets towards and against the hat section; and

f. curing the hat section with a cap strip of composite material and the two adjacent web sheets substantially equally about the inserted tube circumference so that the tube and the cured about web sheets become a stiffened structural web and together with the hat section forms a load-carrying beam.

4,452,658

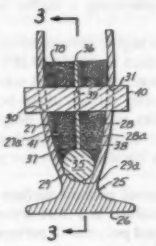
METHOD FOR MAKING A HELICOPTER ROTOR BLADE

Burford J. Schramm, 1330 E. Fremont Dr., Tempe, Ariz. 85204

Division of Ser. No. 26,653, Apr. 3, 1979, Pat. No. 4,316,700. This application Dec. 28, 1981, Ser. No. 335,268

Int. Cl.³ B29C *11/00*

U.S. Cl. 156—245 **5 Claims**



1. A method for making a helicopter rotor blade, comprising:

(a) in a first longitudinally-extending trough-like mold having a pair of side walls and a curved bight joining said side walls, placing a longitudinally-extending counterweight member in the region of said bight, said counterweight member including a root member attached thereto, and a retention member projecting from the root member, laying a group of fibers in the mold atop the counterweight member and on each side of the root member, wrapping the group around said retention member, and laying at least a part of the wrapped around portion atop at least part of the group underneath it, whereby to form a bight in the group to provide for longitudinal restraint by the retention member, filling the interstitial spaces within the aforesaid with a curable initially liquid plastic material, curing said plastic material to form a monolithic spar with an outer shape determined by the mold where contact is made with the mold;

(b) in a second and a third longitudinally-extending mold, each having a mold-wall with a concave curvature which is substantially the reverse of half of a convex air foil, layering sheets of reinforcing material on said mold wall and filling all interstitial spaces with a curable initially liquid plastic material, and curing said plastic material to form a first and a second skin section, each having an outer convex surface which is substantially one-half of an airfoil surface, with a leading edge and a trailing edge;

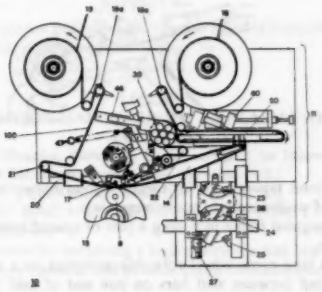
(c) placing said cured skin sections in opposition to one another, with the spar member and a longitudinally-extending spacer member between them, and bonding said skin sections to said spar member and to said spacer member and their trailing edges to each other, while exerting a clamping force against said two skin sections.

4,452,659

WEB TRANSPORT SYSTEM WITH ELECTRO-OPTICAL LABEL DETECTION

Friedrich H. H. Geurtsen, Holliston, Mass.; Waldemar S. Kebbel, Bremen, and Manfred Meyer, Stuhr, both of Fed. Rep. of Germany, assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 329,834, Dec. 11, 1981, Pat. No. 4,383,880. This application Nov. 22, 1982, Ser. No. 443,492
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—361 12 Claims



1. An improved label transfer machine of the type including a web bearing a plurality of labels, means for routing the web through a transport path past a transfer site, and means for transferring labels onto articles at the transfer site during labelling intervals, wherein the improvement comprises means for controlling the transport of the web comprising:

means for generating a timing signal in response to a predetermined optical contrast within the labels:

means for generating an enabling signal at a first point within each labelling interval;

means for generating a disabling signal at a second point within each labelling interval;

means for initiating web motion in response to a given disabling signal; and

means for halting web motion in response to a given timing signal, subsequent to an enabling signal but prior to the next disabling signal.

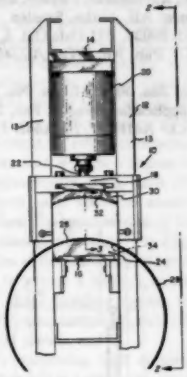
4,452,660

BEAD JAMMING OR CRIMPING APPARATUS

Richard A. Davies, Union City, Tenn.; Michael W. Lee, Arlington, Ky.; Frank A. Rodenberger, Woodland Mills, Tenn.; James R. Hill, Hokes Bluff, Ala.; David P. Kulavich, Attalla, Ala., and Donald L. Sowell, Jacksonville, Ala., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1982, Ser. No. 423,733
Int. Cl.³ B29H *17/32*
U.S. Cl. 156—422 15 Claims

1. A bead crimping apparatus for a bead ring having strands coated with an elastomeric material and coiled in a plurality of convolutions with the inside ends of the strands positioned at the radially inner surface of the ring and the outside ends of the strands positioned at the radially outer surface of the ring, comprising an upper die member and an inner die member of said bead crimping apparatus, said inner die member having an inner groove with a generally cylindrical base portion and radially extending side portions, means to move said inner die member and said upper die member together for simultaneous mating engagement with said inside ends and said outside ends and for compressing said strands between said side portions and against said base portion and means for separating said



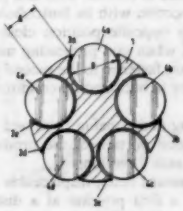
inner die member and said upper die member for removal of said ring from said groove.

4,452,661

TUBE WINDING HEAD WITH FLEXIBLE SHAFTS

Manfred Wendler, Griesheim; Jürgen Marcinkowski, Mörfelden, and Jürgen Brehm, Griesheim, all of Fed. Rep. of Germany, assignors to Techno-Chemi Kessler & Co. GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 16, 1982, Ser. No. 399,160
Claims priority, application Austria, Jul. 24, 1981, 3281/81
Int. Cl.³ B31C *1/00*; B65H *81/00*
U.S. Cl. 156—428 4 Claims



1. A tube winding head for forming continuous length of tubing, comprising a stationary cylinder forming a core having a central longitudinal axis and a given axial length, a plurality of longitudinal helical grooves in said cylinder, said grooves extending along the entire axial length of said cylinder, a flexible feed shaft of given diameter rotatably held in each of said helical grooves for guiding the respective flexible feed shaft along the entire axial cylinder length, said helical grooves having a radial depth, relative to said longitudinal cylinder, larger than one half of said given shaft diameter so that each groove encircles its shaft for more than one half of the shaft circumference, whereby holding means for said flexible shafts other than said helical grooves are obviated.

4,452,662

DEVICE FOR THE FASTENING OF BUTTONS TO A PIECE OF GARMENT OR OTHER TEXTILE PRODUCT

Bengt O. Pettersson, Kungsbacka, Sweden, assignor to NPI New Products Investment AB, Askim, Sweden

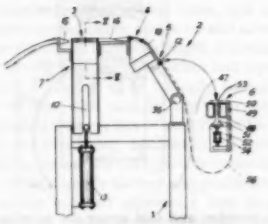
PCT No. PCT/SE81/00028, 371 Date Oct. 5, 1981, 102(e) Date Oct. 5, 1981, PCT Pub. No. WO81/02245, PCT Pub. Date Aug. 20, 1981

PCT Filed Jan. 30, 1981, Ser. No. 309,884

Claims priority, application Sweden, Feb. 7, 1980, 8000983

Int. Cl.³ A41H *37/10*; A44B *1/42*

U.S. Cl. 156—562 5 Claims



1. A device for fastening buttons, each having a projection, to a textile product having a first portion with a number of button holes for cooperation with the buttons, and a second portion to which the buttons shall be fastened with their projections, said device comprising:

first holding means having means for holding the buttons in spaced positions corresponding to the spaces between buttonholes in such a position that the projections freely extend in a common direction and also having means for holding the first portion of the product;

feeding means for the buttons including a hopper, feeding members and a feeding path which extends to said first holding means;

second holding means with members for holding the second portion of the product;

processing means for fastening the projections to the second portion of the product;

and moving means for bringing together said first and second holding means in a position in which the projections contact the second portion held by said second holding means and are held in contact with said processing means when the first portion with its buttonholes over the projections is in an opposite position close to said second portion, so that, when said processing means is activated the projections are fastened to the second portion with the buttons thereafter in buttoned-up condition relative to the first portion;

said second holding means being fixed and its members for holding the second portion of the product substantially pointing in upwards direction;

said first holding means being displaceable by said moving means between a first position at a distance from said second holding means and a second position, in which the projections contact the second portion held by said second holding means and are brought in contact with said processing means;

said moving means being arranged to pivot said first holding means in such a manner that its portion designed to hold the buttons and said first holding means point upwards and forwards towards said second holding means in the first position, whereas said first holding means is substantially pointing downwards towards said second holding means in the second position, whereby said portions of the two holding means are easily accessible in order to put the product in place and the projections will be positioned in such a manner that the threading of the buttonholes over the same is facilitated, said feeding means occupying a fixed position close to the first position of said first holding means and being arranged to transport the buttons to said first holding means, when the same is in the first position, but arranged to permit movement of said first holding means into its second position.

4,452,663

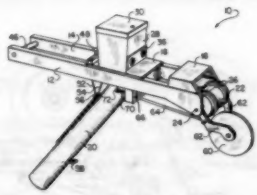
WALL BOARD TAPING APPARATUS

Wilbur L. Heaton, 8215 Vernier Dr., Lemon Grove, Calif. 92045

Filed Apr. 16, 1982, Ser. No. 369,179

Int. Cl.³ B44C *7/02*

U.S. Cl. 156—575 9 Claims



1. A joint taping tool for taping a joint between adjacent panels of wallboard said tool comprising:

an elongated frame including a pair of spaced apart parallel bars,

a first tape press wheel rotatably mounted on a shaft supported between said bars on one end of said frame for pressing a tape into a joint,

a reservoir container for containing a joint compound mounted intermediate the ends of said frame and having an inlet slot on one side and a variable height outlet slot on the other side,

a source of joint tape including a roll mounted on a shaft supported between said bars on the other end of said frame for passing via said inlet slot and said outlet slot through said housing for picking up joint compound thereon and passing over the press wheel for application to a joint,

a handle secured to and extending downward from the frame proximate the center thereof,

brake means mounted on said frame for selectively gripping and holding said tape, and

a second press wheel movably mounted on said frame beneath said first tape wheel and extendable to a position forward of said first tape wheel for forcing said tape into a corner joint, said second press wheel retractable to a position behind said first press wheel for nonengagement with said tape, and said second press wheel is mounted on linkage means including first latching means for latching said second press wheel in the extended position and including second latching means for latching said second press wheel in the retracted position.

4,452,664

METHOD FOR PREDETERMINING PEEL STRENGTH AT COPPER/ALUMINUM INTERFACE

Delton A. Grey, Jr., Scotia, and Robert W. Green, Esperance, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,280

Int. Cl.³ B44C *1/00*

U.S. Cl. 156—631 11 Claims

1. The method of making a copper-clad laminate which comprises the steps of:

forming a copper film on a flexible aluminum carrier sheet by vapor depositing copper directly on one clean major surface of said sheet, said major surface having a matte finish and

simultaneously maintaining the temperature of said major surface in the temperature range from about 0° C. to about 100° C., the temperature being controlled such that the

magnitude of the bonding developed between said copper film and bondable surface area of said major surface pro-

vides release peel strength therebetween of from about 0.1 to about 2.0 pounds per inch.

4,452,665

POLYMERIC HALOCARBONS AS PLASMA ETCH BARRIERS

Hiroyuki Hiraoka, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,221

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; B29C *17/08*

U.S. Cl. 156—643 **5 Claims**

1. A process for preparing a high resolution and high aspect ratio polymer pattern, said process being characterized by the steps of:

(1) depositing a polymer film on a substrate,

(2) covering said polymer film with an etch barrier which is a halocarbon polymer, and

(3) etching with reactive ions to yield development in the dry state.

4,452,666

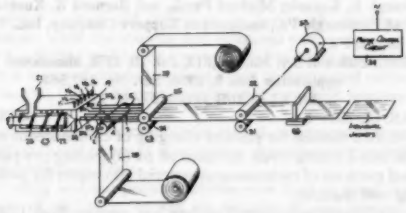
METHOD OF MAKING A MULTI-CHANNEL TRANSPARENT MICROFILM JACKET

Isidore Dorman, Whitestone, N.Y., assignor to NB Jackets de Puerto Rico, Caguas, P.R.

Division of Ser. No. 792,109, Apr. 29, 1977, which is a continuation of Ser. No. 463,814, Apr. 24, 1974, abandoned. This application Jun. 13, 1980, Ser. No. 159,188

Int. Cl.³ B29D *7/02*

U.S. Cl. 156—243 **2 Claims**



1. A method of producing individual multi-channel transparent jackets for accommodating microfilm strips having a predetermined thickness and width, each jacket being composed of front and rear rectangular panels in superposed relation formed of flexible transparent polyethylene terephthalate film having predetermined polymeric properties, the method comprising the steps of:

(A) directing a plurality of spaced extruded molten streams of moldable polyester material compatible with the material of the panels and having a predetermined cross-sectional area onto the surface of a first web formed of panel material in path thereon which are parallel to the longitudinal axis of the web and have spacings therebetween to define said multi-channels:

(B) advancing said first web carrying said streams concurrently with a second web of panel material into combining rolls having an adjustable nip; said second web having a thickness no greater than about one mil to form individual jackets suitable for contact printing, said first web having a thickness substantially greater than that of the second web sufficient to impart body to said web;

(C) adjusting said nip with reference to the cross-sectional area of the streams to effect compression and flattening thereof between said webs to a degree forming in situ ribs extending longitudinally along each of said webs which are spaced from each other to create channels whose width is substantially equal to that of the microfilm strips and having a thickness substantially equal to the thickness of the microfilm strips and being integrally bonded to each of said webs to create a unitary combined web free of adhesive and other bonding agents wherein said polymeric properties are unimpaired, said ribs maintaining said webs in parallel planes; and

(D) transversely sectioning said combined web to form open-ended channels in a stip-receiving condition, thereby defining said individual jackets.

4,452,667

LABELLING MACHINE

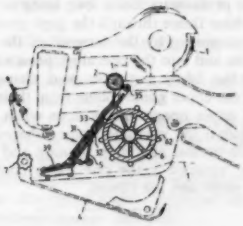
Sang B. Chang, 268-3, Suyu 2-dong, Dobon-Ku, Seoul, Rep. of Korea

Filed Jul. 9, 1982, Ser. No. 396,928

Claims priority, application Rep. of Korea, Jul. 29, 1981, 2748; Jul. 29, 1981, 2749

Int. Cl.³ B65C *11/02*

U.S. Cl. 156—384 **6 Claims**



1. A labelling machine including:

a feed roller;

a guide member movable toward and away from the said feed roller;

means mounted on the upper end of said guide member and operable when said guide member is moved away from said feed roller to cause a label tape to be fed into said guide member;

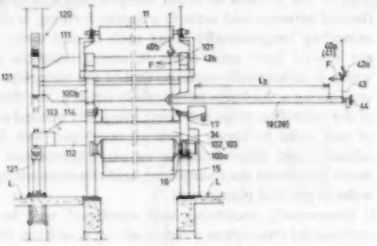
guide means formed in said guide member to receive label tape and operable when said guide member is moved toward said feed roller to engage said feed roller, thereby to enable said feed roller to feed label tape; and

print means to print on the label tape.

4,452,668
METHOD AND APPARATUS FOR CHANGING A PICK-UP FABRIC AND/OR PRESS FABRIC IN A PAPER MACHINE

Olva Vallius, and Lassi Veijonen, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Feb. 19, 1982, Ser. No. 350,295
Claims priority, application Finland, Feb. 25, 1981, 810575
Int. Cl.³ D21F *3/04, 7/08*; D21G *9/00*
U.S. Cl. 162—199 **10 Claims**



1. A method employed in a closed press section of a paper making machine for changing a looped pick-up or press fabric, the substantial run of which when the fabric is in its normal operating position passes above a group of nip defining press rollers of said paper making machine, said machine including a machine frame having a side frame component from which insert members are removed to provide gaps therewithin and wherein the press nip or nips through which the fabric passes are opened for the changing of the fabric, said method comprising the steps of

shifting upper guide rollers situated within and guiding the loop of the fabric from an upper operating position occupied thereby when the fabric is in its normal operating position to a lower position essentially lower than the normal operating positions of said upper guide rollers;

transporting the changing fabric on a changing pole on which the fabric is wound in a double manner, and opening and spreading out said fabric to define a loop which encircles all said press and guide rollers, including the shifted upper guide rollers, which are situated within the fabric loop when the fabric is in its normal operating position;

passing the preliminary fabric loop being so transported into the machine frame through the gaps provided in the side frame component by the removal of the insert members therefrom and into the operating press nips; and

spreading the fabric out from said changing pole while shifting the upper guide rollers from their lower positions to their upper operating positions when the fabric is located within the machine frame whereupon said fabric attains its normal operating position and the insert members are replaced in the side frame component and the opened press nips are closed.

4,452,669
MULTI-NIP PRESS PORTION OF A PAPER OR CARDBOARD MACHINE

Erkki Koski, and Olli Tapio, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

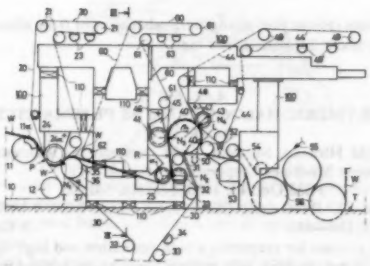
Continuation-in-part of Ser. No. 287,299, Jul. 27, 1981. This application Apr. 5, 1982, Ser. No. 365,559
Claims priority, application Finland, Dec. 3, 1981, 813875
Int. Cl.³ D21F *2/00, 3/04*
U.S. Cl. 162—305 **14 Claims**

1. In a multi-nip press section of a paper or cardboard machine or the like wherein a web is detached from a forming wire by a pick-up roller and simultaneously transferred onto a first fabric operating as a pick-up fabric and on which the web is passed to a first nip, said press section including at least two water-removing press nips situated after said first nip in the direction of web passage, the last of said water-removing nips being formed around a smooth-surface central roller, and wherein the web is detached from said central roller for passage to the drying section of the paper machine, the improvement comprising:

said first nip being formed by a counter-roller situated in nip-defining relationship with said pick-up roller;

a second fabric passing through said first nip and over said counter-roller, the web being carried on the upper face of said second fabric to a second nip of said press section;

said second nip being formed between first and second press rollers and constituting a double-fabric nip, said second



fabric and a third fabric passing through said second nip, said second fabric constituting a lower fabric and said third fabric constituting an upper fabric;

said third fabric having a substantially vertical straight run, not supported by any roller, between said second and a third nip, the web being carried on said vertical straight and unsupported run of said third fabric from said second to said third press nip of the press section, said third press nip being formed between said central roller and a third press roller situated within a loop of said third fabric; and

wherein after said third nip, said third fabric is separated from the web, said web passing on the face of said smooth-surface central roller to either a subsequent nip or to a web-detachment point.

4,452,670
METHOD AND APPARATUS FOR RECOVERING PREHEATER COAL FINES

Joseph E. Kovacic; Michael Perch, and Bernard R. Kuchta, all of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 926,512, Jul. 20, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,364
Int. Cl.³ C10B *31/00, 57/08, 57/10*
U.S. Cl. 201—6 **14 Claims**

1. In a method for pipeline charging of carbonaceous material into a coking oven, the steps of: p1 (a) feeding pre-pulverized particles of carbonaceous material into means for preheating said material;

(b) flowing superheated preheat gas, ranging from 1200° to 1600° F., through said material at a rate of flow sufficient to rapidly preheat said material while providing a turbulent fluid combination of said material and said preheat gas which serves to break up said particles of said material by means of collision and explosion thereof, within said means for preheating;

(c) entraining said broken up particles of said material, at the ambient temperature of said preheat gas, such that said broken up particles of said material are generally evenly distributed in said preheat gas, within said means for preheating;

(d) conducting upwardly, from said means for preheating, said generally evenly distributed broken up particles of

said material entrained in said preheat gas, at said ambient temperature of said preheat gas;

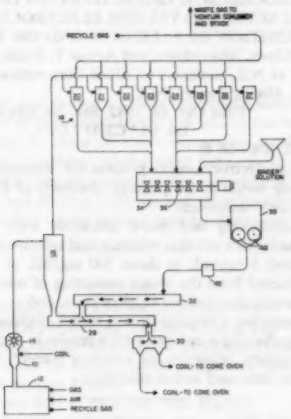
(e) separating carbonaceous fines, sized at 100 mesh and smaller, fromthe other broken up particles of said material while maintaining said carbonaceous fines and said other broken up particles of said material at said ambient temperature of said preheat gas;

(f) separating said preheat gas from said carbonaceous fines and said other broken up particles of said material while maintaining said carbonaceous fines and said other broken up particles of said material at said ambient temperature of said preheat gas;

(g) conducting said other broken up particles of said material to a means of distribution while maintaining said other broken up particles of said material at said ambient temperature of said preheat gas;

(h) conducting said carbonaceous fines to a means of coating said carbonaceous fines with a liquid binder while maintaining said carbonaceous fines at said ambient temperature of said preheat gas;

(i) using the preheated state of said carbonaceous fines, being equivalent to said ambient temperature of said preheat gas, to promote the wetability of said liquid binder by raising the temperature of said binder, thereby equalizing the temperature of said carbonaceous fines and said liquid binder;



(j) liquid coating said carbonaceous fines with said liquid binder while maintaining said equalized temperature;

(k) conducting said liquid binder coated carbonaceous fines to a means of compacting said liquid binder coated carbonaceous fines while maintaining said equalized temperature;

(l) compacting said liquid binder coated carbonaceous fines, utilizing said means of compacting, to produce compacted carbonaceous fines;

(m) sizing said compacted carbonaceous fines to equal the size of said other broken up particles of said material, while maintaining said equalized temperature;

(n) conducting said sized compacted carbonaceous fines to said means of distribution while maintaining said equalized temperature;

(o) admixing said sized compacted carbonaceous fines to said other broken up particles of said material, said sized compacted carbonaceous fines being at said equalized temperature at the point of said admixing, said other broken up particles of said material being at said ambient temperature of said preheat gas, within said means of distribution, at said point of admixing;

(p) conducting the contents of said means of distribution, by way of pneumatically pressurized pipeline means directly to coking ovens, while maintaining said contents at the temperature that results from said admixing.

4,452,671

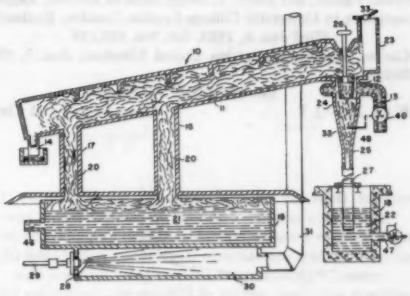
OIL SEPARATION AND HEAT RECOVERY SYSTEM

William J. Oakes, Chambersburg, Pa., assignor to Nibble With Gibble's, Inc., Chambersburg, Pa.

Continuation-in-part of Ser. No. 939,815, Sep. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 785,027, Apr. 6, 1977, Pat. No. 4,116,226. This application Oct. 20, 1980, Ser. No. 198,302

Int. Cl.³ B01D *5/00*

U.S. Cl. 202—185 A **1 Claim**



1. A system for producing sterilized water from an oil and water mixture comprising,

a cooking process means, a settling tank (43), a water softener and filter (44), a storage tank (45) for industrially clean water, means for oil separation and for destroying micro-organisms and endotoxins (10) in said water thereby providing sterilized water and a second storage tank (42) for said sterilized water,

said process means, settling tank (43), water softener and filter (44), first storage tank (45), means for separation of oil, heat recovery and destroying micro-organisms and exotoxins (10) and a second storage tank (42) all connected in series with each other and to said process means forming a continuous circuit,

first means connecting said process means to said settling tank (43),

second means connecting said settling tank to said water softener and filter (44),

third means connecting said water softener and filter (44) to said first storage tank (45),

fourth means connecting said first storage tank (45) to said means for separation of oil, heat recovery and destroying micro-organisms and exotoxins (10),

fifth means connecting said means for separation of oil, heat recovery and destroying micro-organisms and exotoxins (10) to said second storage tank (42),

sixth means connecting said second storage tank (42) to said process means whereby water from said process means is filtered, sterilized, oil separated therefrom,

said oil separation, heat recovery and means for destroying microorganisms and exotoxins (10) comprising an inclined duct (11) having an upper end and a lower end, and heating means (29) to evaporate water to form steam and oil connected to said inclined duct (11),

oil outlet means (14) on the lower end of said inclined duct (11),

a barometric condenser (32) connected to the upper end of said duct,

water inlet means (12) connected to said barometric condenser (32),

said barometric condenser (32) being connected to said second storage tank (42),

for condensing said steam whereby said steam from said duct is condensed into hot water and said hot water flows into said second storage tank for return to said process means.

4,452,672

PROCESS AND APPARATUS FOR POLAROGRAPHIC DETERMINATION OF OXYGEN AND CARBON DIOXIDE

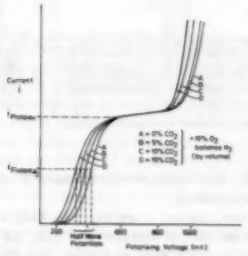
Dewood Parker, and David T. Delpy, both of London, England, assignors to University College London, London, England

Filed Jan. 4, 1983, Ser. No. 455,615

Claims priority, application United Kingdom, Jan. 7, 1982, 8200412

Int. Cl.³ G01N 27/46

U.S. Cl. 204—1 T 14 Claims



1. The method of determining the partial pressure in a medium of a first gas and of a second gas, wherein said second gas in aqueous solution generates an acid or a base comprising the steps of:

providing a polarographically sensed first signal at a first bias voltage, said first signal being representative of the concentration of said first gas,

providing a polarographically sensed second signal at at least a second bias voltage, said second signal being representative of the concentration of both of said gases, and

comparing said first signal and said second signal to provide a third signal representative of the concentration of said second gas.

4,452,673

PRETREATMENT BATHS FOR SILVER PLATING

Satoshi Takano, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 349,980, Feb. 18, 1982. This application Mar. 23, 1983, Ser. No. 478,881

Claims priority, application Japan, Feb. 23, 1981, 56-25746

Int. Cl.³ C25D 5/34, 5/36, 5/40

U.S. Cl. 204—29 2 Claims

1. A process for silver plating on a substrate of copper, nickel or iron or their alloys, comprising immersing said substrate in a pretreatment bath containing at least one compound selected from the group consisting of dithiocarbamic acids and their salts and thiosemicarbazides and their salts and thereafter electroplating silver onto said substrate from a silver plating bath.

4,452,674

ELECTROLYTES FOR ELECTROCHEMICALLY TREATED METAL PLATES

Thomas N. Gillich, Whitehouse Station; John E. Walls, Annandale; Stanley F. Wanat, Scotch Plains, and William J. Rozell, Martinsville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 188,092, Sep. 26, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,707

Int. Cl.³ C25D 11/02, 11/08, 11/10

U.S. Cl. 204—33 59 Claims

1. A process for preparing an element comprising:

(a) cleaning a metal article, and

(b) electrolyzing said metal article made anode using direct current in an aqueous organic electrolytic solution having dissolved therein an acid component, said acid component consisting essentially of a water-soluble polybasic organic acid or mixture of two or more water-soluble polybasic organic acids which, if carboxylic be at least tribasic, under electrolytic conditions sufficient to form a metal complex, including said organic acid, bonded to the surface of said metal article, wherein the surface of said element is substantially non-porous and hydrophilic.

4,452,675

PROCESS FOR THE ACTIVATION OF NICKEL ELECTRODES VIA THE ELECTROCHEMICAL DEPOSITION OF SELENIUM AND/OR TELLURIUM

Divna Cipris, Morristown, and Arthur T. Walsh, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 18, 1982, Ser. No. 434,984

Int. Cl.³ C25D 11/00

U.S. Cl. 204—56 R 11 Claims

1. An electrochemical process for activation of a nickel electrode useful as the positive electrode of a secondary battery which comprises:

(a) contacting said nickel electrode with an electrically conductive solution wherein said solution contains at least about 5 mg/mL to about 100 mg/mL of one compound selected from the group consisting of selenium and tellurium in the positive valence state, and

(b) applying a voltage to said nickel electrode and generating thereby a current which results in the doping of said selenium, tellurium, or mixtures thereof, from said solution onto said nickel electrode.

4,452,676

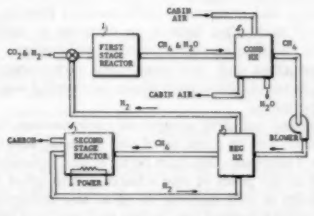
CARBON DIOXIDE CONVERSION SYSTEM FOR OXYGEN RECOVERY

Philip J. Birbara, Windsor Locks; Francis S. Galasso, Manchester, and Richard D. Veltri, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 30, 1982, Ser. No. 373,768

Int. Cl.³ C25B 1/04

U.S. Cl. 204—129 5 Claims



1. A method of reclaiming oxygen from carbon dioxide exhaust comprising reacting the carbon dioxide with hydrogen

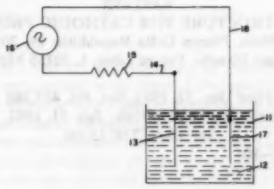
to form a mixture of methane and water and electrolyzing the water to form hydrogen gas and oxygen, wherein the improvement comprises passing the methane produced without additives over a high temperature stable glass surface heated to a temperature of about 1000° C. to about 1200° C. to produce carbon deposits having a density greater than about 2 grams per cubic centimeter and hydrogen gas for reacting with the carbon dioxide, removing and collecting the carbon deposits produced.

4,452,677

TUNGSTEN-QUARTZ SEALS

Donald A. Richardson, Beverly, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Feb. 2, 1983, Ser. No. 462,836
Int. Cl.³ C25F *3/08*
U.S. Cl. 204—129.1 **3 Claims**



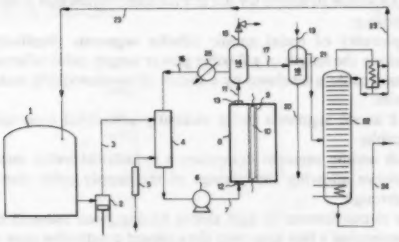
1. In the method of reducing cracks in hermetic seals formed between drawn, ground tungsten rod and quartz, the improvement comprising the steps of: electrochemically etching said tungsten rod in an etching solution until some of the original draw lines appear; stopping said etching; removing said tungsten rod from said etching solution; and subsequently sealing said tungsten rod in quartz to form said hermetic seal.

4,452,678

PROCESS AND APPARATUS FOR THE PHOTOCHEMICAL PRODUCTION OF HALOGENO-ALKANES AND CYCLOALKANES

Jean Ollivier, Croix de Buzy, France, assignor to Societe Nationale Elf Aquitaine, France

Filed Apr. 4, 1983, Ser. No. 481,855
Claims priority, application France, Apr. 7, 1982, 82 06031
Int. Cl.³ C07C *17/00*; C07G *13/00*
U.S. Cl. 204—163 R **19 Claims**



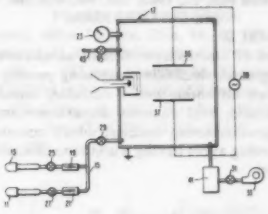
1. In a process of halogenating an alkane or cycloalkane by passing a solution of halogen in the alkane or cycloalkane through a zone irradiated by ultraviolet light, the improvement which comprises disposing at least one metal of Group VB of the Periodic Classification of Elements at the inlet of said zone, whereby the solution comes into contact with the metal when flowing to the zone of irradiation.

4,452,679

SUBSTRATE WITH CHEMICALLY MODIFIED SURFACE AND METHOD OF MANUFACTURE THEREOF

Terry S. Dunn, Raleigh; David B. Montgomery, and Joel L. Williams, both of Cary, all of N.C., assignors to Becton Dickinson and Company, Paramus, N.J.

Continuation-in-part of Ser. No. 309,525, Oct. 7, 1981. This application Aug. 25, 1983, Ser. No. 526,297
Int. Cl.³ C07C *17/00*; B05D *3/06*
U.S. Cl. 204—164 **14 Claims**



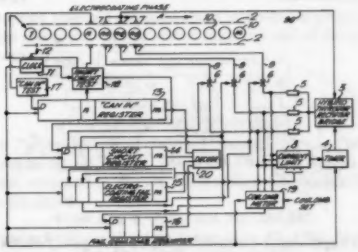
1. A method for providing specific chemical functional groups on the surfaces of organic substrates comprising;
(a) providing an organic substrate within a reaction zone
(b) introducing a vaporized material into said reaction zone, said material being suitable for providing a plasma
(c) subjecting said material to plasma producing conditions, whereby the plasma comprises neutral material, positive ions of said material, negative ions of said material, electrons and photons
(d) preventing at least one of the components of said plasma from contacting the surface of said organic substrate,
(e) contacting the surface of said substrate with the remainder of said components of said plasma, and
(f) forming specific functional groups of said material on the surface of said organic substrate.

4,452,680

ELECTROCOATING APPARATUS AND METHOD OF USE THEREOF

Douglas H. Jackson, 24 Adkin Way, Wantage, Oxon; Jack R. Madley, 11 Pettiwell, Garsington, Oxon, and Dennis C. Lathwell, 33 Nobles Close, Grove, Wantage, Oxon, all of England

Filed Oct. 7, 1981, Ser. No. 309,349
Claims priority, application United Kingdom, Oct. 15, 1980, 8033283
Int. Cl.³ C25D *13/18*
U.S. Cl. 204—181 R **24 Claims**



21. A method of monitoring and controlling the operation of an electrocoating apparatus in which a plurality of electrocoating cells are moved successively to each of a plurality of operating stations, the method comprising the steps of testing one

or more parameters of each cell against a predetermined standard, and only if the cell meets the standard, subsequently applying one or more unidirectional electrical pulses to that cell as electrocoating pulses therefor.

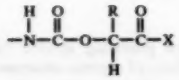
4,452,681

METHOD OF ELECTRODEPOSITION OF COATING COMPOSITIONS CONTAINING NOVEL URETHANE CURING AGENTS

Thomas C. Moriarity, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 10, 1983, Ser. No. 465,704
Int. Cl.³ C25D *13/06*
U.S. Cl. 204—181 R **24 Claims**

1. A method of electrodeposition of an electroconductive surface serving as an electrode comprising passing an electric current between an anode and a cathode, immersed in an aqueous dispersion, said aqueous dispersion comprising an active hydrogen-containing material which contains an ionic group, and a curing agent having a urethane-containing moiety of the structure:



wherein R is hydrogen, an alkyl, alkenyl or aryl group, wherein X is hydrogen, an alkyl, alkenyl or aryl group, or wherein X is a moiety of the structure:

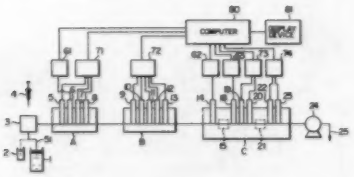
of which R_1 and R_2 are, each independently, hydrogen, an alkyl, alkenyl or aryl group, or members of a cyclic or heterocyclic group; said curing agent is present as a separate component or an integral component of the active hydrogen-containing material.

4,452,682

APPARATUS FOR MEASURING CLINICAL EMERGENCY CHECK ITEMS OF BLOOD

Yoshinori Takata, Ibaraki; Hiroyuki Miyagi, Mito; Kunio Hirota, Hitachi; Yasuhisa Shibata; Kazuo Nidaira, both of Ibaraki, and Fusao Shirato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,264
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—403 **12 Claims**



1. An apparatus for measuring blood emergency check items by electrochemically measuring pH, gas component concentrations or pressures, and electrolyte component concentrations of whole blood by a flowthrough system, which comprises:

(1) a sampler,

(2) a blood pH/gas component sensor unit comprising a flow cell provided with a pH sensor electrode, at least one gas sensing electrode and a reference electrode.

(3) a blood electrolyte component sensor unit comprising a flow cell provided with a plurality of ion sensing electrodes and a reference electrode, the sampler and the sensor units being arranged separately from each other and in series in the order given, and

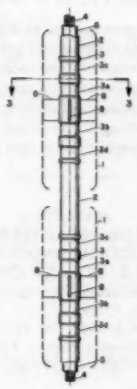
(4) a blood sample flow passage providing successive communication between the sampler, the blood pH/gas component sensor unit, and the blood electrolyte component sensor unit.

4,452,683

ANODIC STRUCTURE FOR CATHODIC PROTECTION

Oronzio de Nora, Piazza Della Repubblica 19, 20123 Milano, and Giuseppe Bianchi, Piazza Libia, 1, 20135 Milano, both of Italy

Filed Dec. 22, 1982, Ser. No. 452,268
Claims priority, application Italy, Jan. 21, 1982, 19208 A/82
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **5 Claims**



1. An anode structure for use in a cathodic protection system comprising:

a plurality of metal anodic tubular segments distributed along the length of a flexible power supply cable wherein said cable is insulated by a sheath of an elastomeric material;

said anode segments being coaxially assembled over said cable;

each anodic segment comprises a cylindrical valve metal sleeve allowing the passage of the supply cable therethrough;

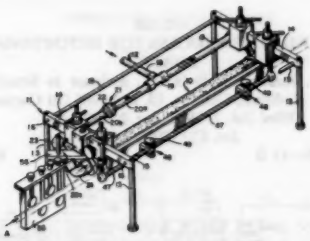
the circumference of said sleeve having been reduced by squeezing a first time over the exposed conductive core of the power supply cable for a certain length in correspondence of the central portion of the sleeve to provide the electrical connection and subsequently over the insulating sheath of elastomeric material of the cable at the two ends of the sleeve to provide a leakproof sealing of the electrical connection; and a porous and permeable valve metal body coated with a layer of non-passivitable material connected to said valve metal sleeve.

4,452,684

APPARATUS FOR SELECTIVE ELECTROLYTIC PLATING

Karl Palnik, Huntingdon Valley, Pa., assignor to The Carolinch Company, Ivyland, Pa.

Filed Mar. 11, 1983, Ser. No. 474,320
Int. Cl.³ C25D 17/00, 17/28
U.S. Cl. 204—206 16 Claims



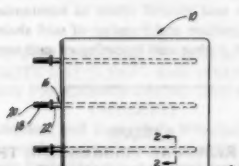
1. Apparatus for the electroplating of parts, wherein the parts are interconnected in the form of elongated strip material wherein the metallic strip material is moved in a path which extends lengthwise of the apparatus, said apparatus comprising a plating brush means comprised of an elongated body member having its long axis extended parallel to the path of movement of the strip material, said body member having a substantially uniform cross-section throughout its length whereby a brush plating surface is positioned adjacent and in parallel relationship to the path of travel, said body member being composed of a hydrophobic material having interconnected pores dispersed throughout, means including a centrally located distribution conduit extending the length of the body for distributing liquid electrolytic plating solution under pressure into the pores of the body member along the length thereof, said plating brush means further including anodic means for imposing a uniform charge on the liquid plating solution passing from the distribution means to the plating surface and means for moving the metallic strip material from one end to the other of said lengthwise extended body member in contact with said brush plating surface.

4,452,685

ELECTRODES FOR ELECTROLYTIC CELLS

Kenneth E. Woodard, Jr., and Ronald L. Dotson, both of Cleveland, Tenn., assignors to OLIN Corporation, New Haven, Conn.

Filed May 2, 1983, Ser. No. 490,612
Int. Cl.³ C25B 1/34, 11/00
U.S. Cl. 204—252 4 Claims



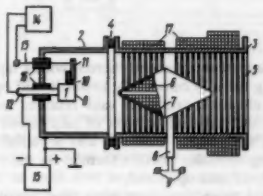
1. An electrode for use in an electrolytic cell, said electrode being comprised of an internal copper conductor and an external element, said element being selected from the group consisting of titanium and nickel, at least a portion of said copper conductor having contact surfaces which are held in intimate contact with contact surfaces of said external element, said conductor and said element having at the area of contact a conductive coating between said contact surfaces of said conductor and said element, said conductive coating being comprised of a mixture of between about 20 and about 30 percent indium by weight and about 80 and about 70 percent gallium by weight, whereby the contact resistance between said conductor and said element is reduced.

4,452,686

ARC PLASMA GENERATOR AND A PLASMA ARC APPARATUS FOR TREATING THE SURFACES OF WORK-PIECES, INCORPORATING THE SAME ARC PLASMA GENERATOR

Ivan I. Axenov, ulitsa Valtera, 21-a, kv. 45; Vitaly A. Belous, ulitsa Svetlaya, 21, kv. 250; Valentin G. Padalka, ulitsa Danilevskogo, 10, kv. 122, and Vladimir M. Khoroshikh, prospekt 50-letia VLKSM, 42, kv. 128, all of Kharkov, U.S.S.R.

Filed Mar. 22, 1982, Ser. No. 360,447
Int. Cl.³ C23C 15/00, 13/08
U.S. Cl. 204—298 7 Claims



1. An arc plasma generator comprising:

a consumable cathode having the form of a cylinder and made of a plasma forming material;

an anode having the form of a cylinder of a greater diameter than that of the cathode, arranged coaxially with said consumable cathode and electrically connected thereto;

a power unit for maintaining an arc, forming said electrical connection between said consumable cathode and said anode and having therefore at least two terminals, one of which being connected to said consumable cathode and the other to the anode,

a tubular plasma guide connected with one of its end faces to an end face of said anode,

an electromagnet arranged in said tubular plasma guide and coaxially therewith,

a housing for said electromagnet made of a non-magnetic material, enclosing the electromagnet and having a cross-sectional area that any imagined straight line projected from a working end face the consumable cathode through an outlet of the plasma guide, would cross at least one of the housing of the electromagnet and the plasma guide, and

a focusing solenoid disposed about said tubular plasma guide and connected in opposition with the coil of the electromagnet.

4,452,687

LEANNESS SENSOR

Yoshio Torisu; Shigenori Sakurai; Takashi Kamo; Toshinobu Furutani, all of Toyota, and Mari Okazaki, Chiryu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 9, 1982, Ser. No. 386,527
Claims priority, application Japan, Jun. 12, 1981, 56-90624
Int. Cl.³ G01N 27/58, 27/30
U.S. Cl. 204—428 7 Claims

1. A leanness sensor comprising:

a sensor element formed of element main body made of an oxygen-permeable solid electrolyte and being provided with inner and outer metallic electrodes respectively

formed on the inner and outer surfaces of the element main body;

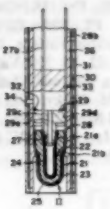
a retainer member having a substantially T-shaped cross section including a tapered closing portion;

an inner metallic member and an outer metallic member mounted on said sensor element and electrically connected to respective inner and outer metallic electrodes; and

a cylindrical insulating tube, said sensor element being fixed to the inside of one end of said insulating tube,

wherein said sensor element is provided on the inner peripheral surface of an open end thereof with a tapered portion diverging radially outwardly towards said open end, said tapered closing portion of said retainer member being fitted in said tapered portion of said sensor element for securing said sensor element, and a radially outwardly projecting shoulder portion formed on the radially outer periphery of said open end,

wherein said cylindrical insulating tube is provided in the inner peripheral surface at said one end thereof with a retaining portion projected therefrom and having a form corresponding to that of said shoulder of said sensor element.



4,452,688

INTEGRATED COAL LIQUEFICATION PROCESS

Thomas O. Mitchell, Ewing, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Aug. 28, 1980, Ser. No. 182,076

Claims priority, application United Kingdom, Sep. 4, 1979, 7930607

Int. Cl.³ C10G *1/06, 1/00*

U.S. Cl. 208—10 **11 Claims**

1. A process for solvent refining of coal at reduced hydrogen consumption and reduced production of normally gaseous hydrocarbons which comprises mixing finely divided coal with hydrogen and a solvent derived in the process which contains substantial quantities of polycyclic aromatic hydrocarbons and phenols during a residence time in a first stage less than about 15 minutes at a temperature of less than about 880° F. to thereby dissolve components of the coal in the solvent, adding to the resultant solution a low boiling hydrogen donor stream derived in the process, reacting the mixture so produced in a second stage under hydrogen pressure for a residence time longer than and a temperature lower than those in the said first stage, separating from the product of said second stage a first fraction containing solids separated from said product, a second fraction consisting essentially of normally liquid components of said product having fourteen or less carbon atoms, hydrogenating a portion of said second fraction under severe conditions to convert monocylic phenols to hydrocarbons and convert polycyclic aromatics to hydrogen donor hydroaromatics, recycling the hydrogenated portion of said second fraction to said second stage as said low boiling hydrogen donor stream, a third fraction containing liquid components of said product which are higher boiling than said second fraction, recycling at least a portion of said third fraction to said first stage as said solvent derived in the process, a fourth fraction constituted by liquid components of said product and corresponding substantially in composition to a mixture of said second and third fractions, subjecting said fourth fraction to hydrotreating under conditions to substantially remove hydroxyl and other functional groups and yield a premium quality fuel and a fifth fraction constituted by normally gaseous components of said product.

4,452,689

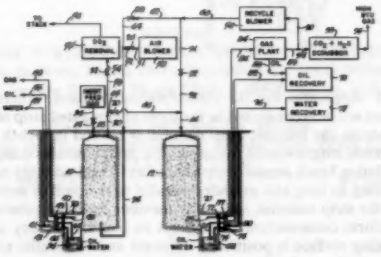
HUFF AND PUFF PROCESS FOR RETORTING OIL SHALE

Leonard W. Russum, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill. and Gulf Oil Corporation

Filed Jul. 2, 1982, Ser. No. 394,681

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—11 R **8 Claims**



1. A process for retorting oil shale, comprising the steps of:

completely retorting substantially all raw oil shale in a first oil shale retort without prior combustion of said oil shale therein with a hot inert feed gas to liberate shale oil and hydrocarbon gases from said raw oil shale leaving retorted shale;

preventing combustion in said first retort during retorting by substantially preventing air from entering said first retort until retorting has been completed in said first retort;

injecting off gases emitted from an oil shale retort through said first retort after said first retort has been completely retorted to heat said off gases to at least the retorting temperature of raw oil shale;

retorting raw oil shale in a second oil shale retort by feeding said heated off gases through said second retort to liberate shale oil from said raw oil shale in said second retort, while simultaneously preventing combustion in said second retort during retorting of said second retort by preventing a substantial amount of air and molecular oxygen from entering said second retort until retorting has been completed in said second retort to substantially prevent flame front ignition and burning of said shale oil in said second retort during said retorting of said second retort.

4,452,690

PETROLEUM RESIDUAL VISBREAKING THROUGH MOLECULAR GRAFTING

Stuart S. Shih, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,102

Int. Cl.³ C10G *31/00*

U.S. Cl. 208—46 **12 Claims**

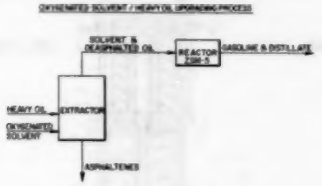
1. A method for improving the properties of a petroleum residual comprising reacting said residual at a temperature above the pour point of said residual but below 350° C. with added olefin in the presence of a catalyst comprising a free radical generating species.

4,452,691

COMBINED PROCESS FOR HEAVY OIL UPGRADING AND SYNTHETIC FUEL PRODUCTION

Robert E. Polomski, Baytown, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,190
Int. Cl.³ C10G *21/16*
U.S. Cl. 208—86 13 Claims



1. A process for converting a high boiling hydrocarbon feedstock to liquid products of lower boiling range which comprises contacting said feedstock with an oxygenated solvent for a time sufficient to precipitate asphaltenes from said feedstock wherein the oxygenated solvent: oil volume ratio is greater than about 5, and without separating said solvent from said deasphalted feedstock, contacting said solvent-containing deasphalted hydrocarbon feedstock with a crystalline zoelite characterized by a silica to alumina mole ratio greater than about 12 and having a constraint index within the approximate range of 1 to 12 to convert said oxygenated solvent to gasoline products and produce gasoline and distillate boiling range hydrocarbons from said deasphalted oil.

4,452,692

PROCESS FOR THE HYDROGENATION OF HEAVY OILS

Hannes Kneissl, Kurstr. 18, 8184 Gmund am Tegernsee, and Klaus Schmid, Libauer Str. 27, 8000 München 81, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 290,812, Aug. 3, 1981, abandoned. This application May 7, 1982, Ser. No. 375,980
Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118456
Int. Cl.³ C10G *47/34*
U.S. Cl. 208—108 12 Claims

1. In a process for the hydrogenation of a normally solid or highly viscous heavy oil produced from petroleum, tar sand, and/or shale in which the heavy oil is heated at a pressure and elevated temperature sufficient to effect a chemical reation of the heavy oil with hydrogen, the improvement which comprises heating said heavy oil in the presence of at least one guanidinium compound as an auxiliary reagent.

4,452,693

PROCESS FOR INCREASING THE ACTIVITY OF PEROVSKITE CATALYSTS AND HYDROCARBON TREATING PROCESSES USING THE ACTIVATED CATALYST

Robert C. Schucker, and Kenneth S. Wheelock, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 351,969, Feb. 24, 1982, Pat. No. 4,418,008. This application Jun. 24, 1983, Ser. No. 507,298
Int. Cl.³ C10G *11/02*
U.S. Cl. 208—121 11 Claims

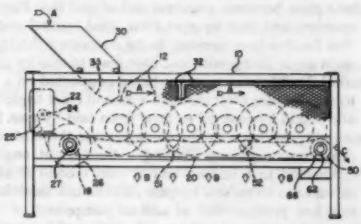
1. A hydrocarbon cracking process which comprises contacting a hydrocarbonaceous feed at hydrocarbon cracking conditions with a catalyst that has been activated by a process which comprises contacting a catalyst comprising a perovskite having at least one alkaline earth metal constituent selected from the group consisting of barium, beryllium, magnesium, calcium, strontium and mixtures thereof, with a reducing gas at reducing conditions for a time sufficient to increase the activity of said catalyst.

4,452,694

APPARATUS FOR SELECTIVE SORTING OF MATERIAL CHIPS

Elmer Christensen, Kirkland, and Frank J. Steffes, Camas, both of Wash., assignors to Black Clawson, Inc., Everett, Wash.

Continuation of Ser. No. 777,898, Mar. 16, 1977, abandoned. This application Oct. 30, 1980, Ser. No. 202,101
Int. Cl.³ B07B *13/04*
U.S. Cl. 209—672 11 Claims



1. In chip sorting apparatus including a plurality of intermeshing rows of discs having opposing faces and contoured outer peripheries, spacers interposed between said faces of adjacent discs in each row and having outer peripheries disposed opposite the contoured outer peripheries of the discs of an adjacent row, whereby said discs in each row are spaced from each other by said spacers, the improvement comprising:

adjacent discs in each of said rows of discs are of different diameters, and

adjacent spacers in each of said rows of discs are of different diameters,

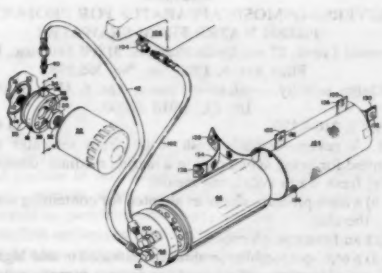
whereby each of said rows is comprised of alternating relatively large and small diameter discs separated by alternating relatively large and small diameter spacers.

4,452,695

FULL-FLOW AND BY-PASS FILTER CONVERSION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Donald R. Schmidt, San Antonio, Tex., assignor to Energy Extension Industries, San Antonio, Tex.

Filed Jul. 14, 1983, Ser. No. 513,733
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—168 6 Claims



1. A combination full-flow and by-pass oil filter conversion system for an internal combustion engine adapted for replacing a normal spin-on full-flow filter threadably connected to an oil filter bushing, said engine having a drain plug at a low pressure side of an oil system having an oil pump, said conversion system comprising:

adapter means connected to said oil filter bushing by an

adapter bushing for sealing said adapter means around said oil filter bushing, said adapter means having at least one oil flow passage generally parallel to said oil filter bushing to allow oil flow from said oil pump therethrough, a cross-bore intersecting said oil flow passage to allow by-pass oil flow therethrough;

a high performance full-flow filter threadably connecting to said adapter bushing, after flow of oil through said full-flow filter, said oil being returned through said adapter bushing and said oil filter bushing to said engine;

by-pass filter connected through a first flexible hose member to said cross-bore which is connected to a first end of said first flexible hose member to receive said by-pass oil from said oil pump;

a base plate between a second end of said first flexible hose member and said by-pass filter, said second end of said first flexible hose member being connected through a first right angle fitting with said base plate to said by-pass filter;

second flexible hose member being connected on a first end to said by-pass filter through a second right angle fitting to allow said by-pass oil to flow from said by-pass filter;

drain plug having a drain return passage therethrough, said drain return passage having a third right angle fitting connected to a second end of said second flexible hose member to allow said by-pass oil to return therethrough to said low pressure side of said oil pump; and

means for mounting said by-pass filter and base plate with respect to said engine;

said high performance full-flow filter and said by-pass filter being of such respective densities and filtering capabilities that a great majority of oil flowing from said oil pump flows through said full-flow filter with a minimum pressure drop while the remainder of the oil from said oil pump is said by-pass oil and flows through said by-pass filter;

at least one of said first, second, and third right angle fittings are pivotal;

said right angle fittings that are pivotal include a hose fitting threadably connected to a right angle boss having a threaded opening intersected by a longitudinal opening therethrough, a hollow screw in flow communication with said by-pass oil flowing through said threaded opening of said right angle fitting to allow said by-pass oil flow through said hollow screw, said hollow screw being sealed with respect to said longitudinal opening; and

said right angle fittings that are pivotal further include a plug nut sealably secured to a lower end of said hollow screw, said plug nut providing for right angle connection to either said base plate or adapted to connect to an oil pan of said engine.

4,452,696

REVERSE-OSMOSIS APPARATUS FOR PRODUCING FRESH WATER FROM SEAWATER

Fernand Lopez, 27 rue Emile Barrière, 31200 Toulouse, France

Filed Apr. 6, 1982, Ser. No. 365,898

Claims priority, application France, Apr. 6, 1981, 81 07185

Int. Cl.³ B01S *31/00*

U.S. Cl. 210—170 **28 Claims**

1. A reverse-osmosis fresh water from seawater system adapted for being submersed in a marine medium, comprising:

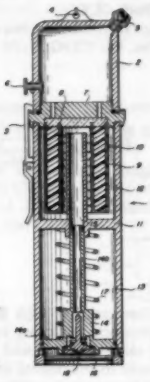
(a) fresh-water collecting means;

(b) a high-pressure chamber adapted for containing seawater therein;

(c) an hermetic chamber;

(d) a semi-permeable membrane positioned in said high-pressure chamber and adapted for reverse-osmosis separation of fresh water from seawater and having a fresh water side in fluid communication with fresh water collecting means and a salt water side immersible in salt water containable in said high-pressure chamber;

(e) pressure application means associated with said hermetic chamber and in pressure communication with said high-pressure chamber for applying pressure to seawater containable therein whereby fresh water flows through said semi-permeable membrane to said fresh water collecting means thereby; and



(f) valve means in fluid communication with said marine medium and said high pressure chamber for filling said high-pressure chamber with seawater.

4,452,697

FILTER FOR DIESEL FUEL

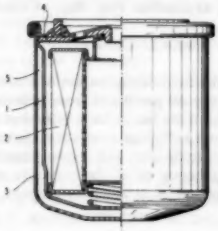
Ulrich Conrad, Ludwigsburg, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,516

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 3027994

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—172 **1 Claim**



1. A filter arrangement for diesel fuel, the filter including a filter housing having an inner shell and a filter pack therein, the arrangement comprising

means for reducing gas bubble formation in and paraffin condensation from said diesel fuel by reducing heat transmission from and to the interior of the inner shell, said means for reducing comprising

outer shell means for tightly sealing in an interspace between said inner shell and other shell means, a body of air at atmospheric pressure adjacent said inner shell reducing movement of said body of air with respect to the inner shell to insulate the inner shell against heat transmission from and to the interior of the inner shell, and wherein

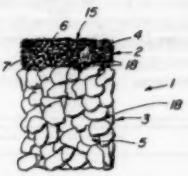
the outer shell means for sealing the interspace comprises a cover member having a flange at an outer periphery thereof.

4,452,698

RIGID FILTER PLATE AND PROCESS FOR MANUFACTURE OF THE SAME

Robert L. Roberts, St. Charles, Ill., and Felix G. Janssen, Ft. Lauderdale, Fla., assignors to U.S. Environmental Products, Inc., St. Charles, Ill.

Continuation of Ser. No. 296,956, Aug. 27, 1981, Pat. No. 4,381,998. This application May 2, 1983, Ser. No. 490,585
The portion of the term of this patent subsequent to May 3, 2000, has been disclaimed.
Int. Cl.³ B01D *39/20*
U.S. Cl. 210—503 20 Claims



1. An improved rigid sludge dewatering filter plate comprising at least two layers;

the first layer comprising a thin, flat filtering element having an exposed, dense upper surface and a lower surface;

said filtering element consisting essentially of irregular particles of one or more substances selected from the group consisting of aluminum oxide, corundum, emery, garnet, silicon carbide, boron carbide and manufactured crystalline alumina products, bonded together with an adhesive bonding agent, wherein the particles are of at least two sizes within the range consisting essentially of about 0.2 inch to about 0.002 inch; and

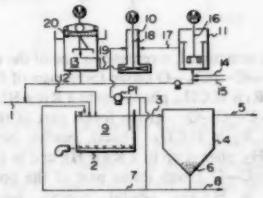
the second layer being a supporting element comprised of particles larger than the largest particles used in the filtering element, bonded together and to the lower surface of the filtering element with an adhesive bonding agent.

4,452,699

METHOD OF IMPROVING THE SVI OF MIXED LIQUOR IN AERATION TANK

Akira Suzuki, Kasukabe; Yasumi Shioya, Tokyo, and Keiichi Kimura, Tsuchiura, all of Japan, assignors to Shinryo Air Conditioning Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1982, Ser. No. 372,802
Claims priority, application Japan, May 7, 1981, 56-68760; Mar. 29, 1982, 57-50489
Int. Cl.³ C02F *3/12*
U.S. Cl. 210—608 7 Claims



1. A method for improving the SVI of mixed liquor in the aeration tank of an activated sludge plant which includes said aeration tank and a sedimentation tank, which comprises the setps of:

(a) introducing to a concentration line comprising a combination of an atmospheric flotation concentrator and a roll press type dehydrator, at least one component from the group consisting of mixed liquor in said aeration tank, mixed liquor drawn from a line connecting the aeration tank to a sedimentation tank and settled sludge flowing out of the sedimentation tank; thereby producing concentrated sludge having a solid content ranging from 4% to 12% by weight, wherein said atmospheric flotation concentrator includes (i) a foaming zone for blowing air under atmospheric pressure into a liquid phase containing a coagulant and a foaming agent, (ii) a mixing zone for mixing bubbles formed in the foaming zone with at least one component from the group consisting of the mixed liquor in the aeration tank, the mixed liquor drawn from a line connecting the aeration tank to the sedimentation tank and the settled sludge flowing out of the sedimentation tank, and (iii) a flotation tank for separating the mixture resulting in step (ii) into concentrated sludge and separated water, and further concentrating the concentrated sludge flowing out of said atmospheric flotation concentrator by said roll press dehydrator; and

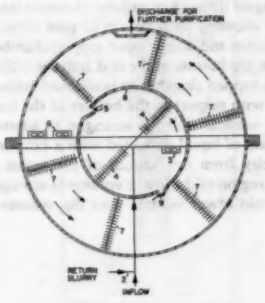
(b) returning said concentrated sludge and said separated water to said aeration tank.

4,452,700

PROCESS FOR THE PERFORMANCE AND CONTROL OF CHEMICAL RESP. BIO-CHEMICAL REACTIONS

Norbert Schneider, Holbeinstr. 13, D 5657 Haan 1, Fed. Rep. of Germany; Jakob H. J. M. van der Graaf, Graaf van Burenstraat 26, NL 7411 RW Deventer, Netherlands, and Jürgen Zink, Schilfweg 3, D 7000 Stuttgart-Hohenheim, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,282
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913132
Int. Cl.³ C02F *3/02*
U.S. Cl. 210—621 11 Claims



1. A process for the performance and control of chemical or biochemical process cycles in at least two series connected reactions stages comprising introducing a liquid flow into a first reaction stage wherein said liquid is brought into substantially horizontally oriented flow by current generating means, said liquid being subjected to controlled gassing by aerator means disposed at the bottom of said first reaction stage; passing a portion of said liquid in said first reaction stage into a second reaction stage, said first and second reaction stage separated by partition means extending throughout the length of said first and second reaction stages and being provided with a continuous passage opening whereby said liquid flows from said first to said second reaction stages, said second reaction stage being characterized by horizontal circulating liquid wherein controlled gassing of said liquid occurs by aerator means disposed at the bottom of said second reaction stage; and recycling a portion of said liquid in said second reaction stage back into said first reaction stage by means of a second continuous passage opening extending throughout the length of said partition means.

4,452,701

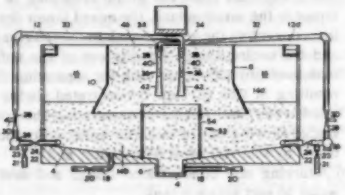
BIOLOGICAL TREATMENT OF SEWAGE

Michael E. Garrett, 92 York Rd., Woking, Surrey, and Oliver A. Kite, 22 Hayes Close, West Wickham, Kent, both of England

Filed Nov. 4, 1982, Ser. No. 439,499

Int. Cl.³ C02F 3/20

U.S. Cl. 210—627 2 Claims



1. A method of treating sewage or other aqueous waste material having a biochemical oxygen demand, which method comprises the steps of establishing in a tank, in which a stilling chamber having a diverging skirt at the lower edge thereof, is disposed in an upper region of the tank, a lower volume of sewage containing suspended aerobic micro-organisms that partake in the biological treatment of sewage, an upper volume of such sewage in the stilling chamber, and, overlying said lower volume, a volume of clarified water at least an upper portion of which surrounds the stilling chamber; withdrawing clear water from the volume of clarified water; withdrawing a stream of sewage from a lower region of the tank; combining the withdrawn stream of sewage with a stream of incoming sewage, and oxygenating the combined streams; passing the oxygenated liquid through an expansion nozzle into the stilling chamber and allowing such stream to pass downwardly into said lower volume and into an open-topped chamber extending from at or near the bottom of the tank into the stilling chamber, with the open-topped chamber so positioned below the stilling chamber and with respect to the bottom of the tank, and having generally vertical walls so arranged to substantially prevent any stream of liquid deflected with a horizontal component of velocity from the bottom of the vessel passing upwardly into a region of the lower volume of sewage near to the boundary of said lower volume with the volume of clarified water.

4,452,702

PROCESS FOR THE EXTRACTION OF CESIUM IONS FROM AQUEOUS SOLUTIONS USING AN ADDUCT COMPOUND CONTAINING A MACROCYCLICAL POLYETHER AND AN INORGANIC HETEROPOLY ACID

Ewald Blasius, Saarbrücken, and Karl-Heinz Nilles, St. Ingbert, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,799

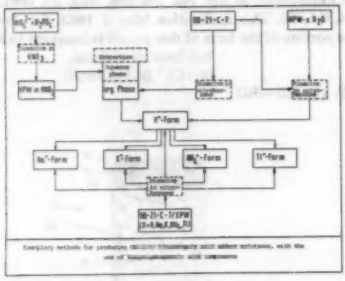
Claims priority, application European Pat. Off., Aug. 31, 1981, 81106783

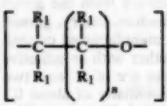
Int. Cl.³ B01D 11/04

U.S. Cl. 210—638 13 Claims

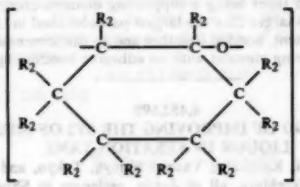
1. Process for the extraction of cesium ions from an aqueous solution with an adduct compound containing a macrocyclical polyether and an inorganic heteropoly acid component, comprising:

(a) producing an organic phase in the form of a solution of an adduct compound in a polar organic solvent, the adduct compound being the product of (i) a crown ether containing at least one species of the structural elements

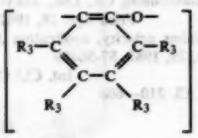




I



II



III

where, in structure I, n represents one of the numbers 0, 1 or 2, the —C—(C)$_n$—O group forms part of the polyether ring and R_1 is H,CH_3, phenyl up to 4 $R_1(\neq H)$; in structure II, the —C—C—O— group forms part of the polyether ring and R_2 is H,CH_3, t-butyl, pentyl, heptyl, nonyl, $(CH_2)_9CH_3$, phenyl up to 2 $R_2(\neq H)$; and in structure III, the —C=C—O group forms part of the polyether ring and R_3 is H,CH_3, t-butyl, pentyl, heptyl, nonyl, $(CH_2)_9CH_3$, phenyl up to 2 $R_3(\neq H)$; with (ii) an inorganic heteropoly acid which is stable in a strongly acid and oxidizing medium, or a salt of the inorganic heteropoly acid;

(b) bringing the aqueous solution containing the cesium ions into contact with the adduct compound solution to extract the cesium from the aqueous solution into the organic phase and thereby charge the organic phase; and

(c) separating the charged organic phase from the aqueous solution.

4,452,703

CONTROL OF SCALE IN SUGAR EVAPORATION EQUIPMENT

Paul H. Ralston, Bethel Park; Sandra L. Whitney, Oakdale, and Jerry L. Walker, Coraopolis, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 344,422, Feb. 1, 1982, abandoned. This application May 24, 1983, Ser. No. 497,543

Int. Cl.³ C02F 5/10

U.S. Cl. 210—698 8 Claims

1. A method for preventing the formation of calcium phosphate and calcium hydroxide scale in sugar juice evaporation equipment comprising adding to the juice from about 0.1 to about 200 ppm of a polycarboxylic acid or its salt selected from the group consisting of polymaleic acid or amine adducts of maleic anhydride polymers, phosphonobutane tri-carboxylic acid, phophinocarboxylic acids and copolymers of an acrylic acid and an hydroxylated lower alkyl acrylate.

4,452,704

METHOD FOR TREATING AQUEOUS MEDIUMS

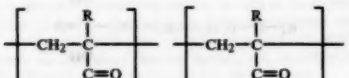
William R. Snyder, Warminster, and Diane Feuerstein, Bensalem, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 337,159, Jan. 5, 1982, Pat. No. 4,427,568, which is a division of Ser. No. 254,842, Apr. 16, 1981, Pat. No. 4,324,664. This application Oct. 28, 1983, Ser. No. 546,238

Int. Cl.³ B01F 17/22

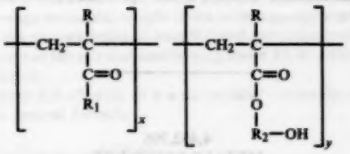
U.S. Cl. 210—701 18 Claims

1. A method of dispersing and maintaining dispersed particulate matter in a system having an aqueous medium which contains particulate matter selected from the group consisting of clay, iron oxide, and mixtures thereof, which method comprises adding to the aqueous medium an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof and moieties (b) of an hydroxlated lower alkyl acrylate, wherein the moieties of the polymer (I) have the following formulas



wherein R is hydrogen or a lower alkyl group of from 1 to 3 carbon atoms; R_1 is OH, OM or NH_2, where M is a water soluble cation; R_2 is a lower alkyl group of from about 2–6 carbon atoms and the mole ratio of x:y is about 34:1 to 1:4, said method comprising also adding to said system, an effective amount for the purpose of a water soluble ester of an aliphatic sulphodicarboxylic acid (II).

10. A method of dispersing, and maintaining dispersed, oil, existing in an aqueous medium, said method comprising adding to said aqueous medium an effective amount for the purpose of a water soluble polymer (I) comprising moieties (a) derived from an acrylic acid or water soluble salt thereof and moieties (b) of an hydroxylated lower alkyl acrylate, wherein the moietites of the polymer (I) have the following formula



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM, or NH_2 where M is a water soluble cation; R_2 is a lower alkyl of from about 2–6 carbon atoms and the molar ratio of x to y is about 34:1 to 1:4, and an effective amount of a water soluble ester of an aliphatic dicarboxylic acid (II).

4,452,705

FILTER DEVICE FOR THE SOFTENING AND/OR COMPLETE DESALINATION OF A LIQUID, PARTICULARLY WATER

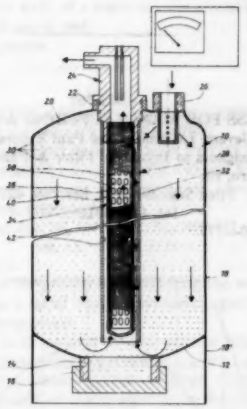
Willy Herrmann, Hagaecker 70, 7151 Affalterbach-Wolfsoelden, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 362,596

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113622

Int. Cl.³ B01J 47/02

U.S. Cl. 210—286 4 Claims



1. In a filter device for the softening and/or complete desalination of a liquid, particularly water, comprising a container which is filled with an ion exchanger compound and through which the liquid to be treated flows, having an inflow and an outflow opening and a hollow filtering member within the container, the interior of the filtering member connected to the outflow opening for discharging purified liquid, the improvement comprising:

the filtering member being a tube which is perforated at its circumference;

a shielding tube closed at its circumference surrounding said filtering member with a spacing, said filtering member extending essentially over the entire length of said shielding tube;

said filtering member connected directly to the discharge opening;

said shielding tube closed at its end face in the region of the discharge side of said filtering member; and

a filter mantle covering said filtering member at least in the entrance zone of the liquid into the space between said

filter member and said shielding tube at the end of said filter member disposed at the open end of said shielding tube.

4,452,706

METALS RECOVERY

John R. H. Shaw, Johannesburg, South Africa, and Diana M. Anderson nee Mounsey, Runcorn, England, assignors to Interox Chemicals Limited, London, England

Filed Nov. 4, 1983, Ser. No. 548,622

Claims priority, application United Kingdom, Nov. 11, 1982, 8232252

Int. Cl.³ C25C *1/08*

U.S. Cl. 210—722 16 Claims

1. A process for the purification of an aqueous acidic leach liquor obtained by contacting a solid minerals mass containing one or more of the metals, cobalt, nickel, copper, and zinc together with iron and arsenic with a sulphuric acid solution, in which purification process the iron and arsenic in solution are oxidised to, respectively, ferric and arsenic ions by introduction of peroxomonosulphuric acid, and the leach liquor is subsequently partially neutralised to a pH in the range of 3.5–4.8 by the introduction of a mixed neutralising agent comprising from 40–60 molar% calcium oxide or hydroxide and the balance sodium hydroxide.

4,452,707

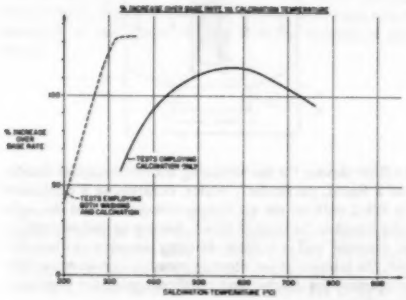
PROCESS FOR MANUFACTURING A FILTER AID

James F. Zievers, LaGrange, and Paul Eggerstedt, Lyons, both of Ill., assignors to Industrial Filter & Pump Manufacturing Co., Cicero, Ill.

Filed Sep. 29, 1982, Ser. No. 427,846

Int. Cl.³ B01D *37/02*

U.S. Cl. 210—777 16 Claims


% INCREASE OVER BASE RATE IN CALCINATION TEMPERATURE
% INCREASE OVER BASE RATE
TESTS EMPLOYING CALCINATION ONLY
TESTS EMPLOYING BOTH WASHING AND CALCINATION
CALCINATION TEMPERATURE (°C)

1. An improved method of filtering coal extract resulting from the extraction of coal with a liquid coal extraction solvent, including the use of a filter aid through which a solution of said coal extract and said coal extraction solvent is passed, wherein the improvement comprises using as the filter aid the product of a washed filter cake from the coal extraction process, said filter cake being washed prior to calcination with a low viscosity liquid ester having a boiling point greater than 300° C., and a vapor pressure less than one millimeter of mercury at 25° C., to remove said coal extraction solvent from said cake.

4,452,708

OIL RECOVERY METHOD USING SULFONATE SURFACTANTS DERIVED FROM EXTRACTED AROMATIC FEEDSTOCKS

Haven S. Aldrich, Seabrook; Thomas L. Ashcraft, Jr., Baytown; Maura C. Puerto, and Ronald L. Reed, both of Houston, all of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Feb. 18, 1982, Ser. No. 349,952

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D 13 Claims

1. A method of recovering crude oil from a subterranean reservoir which comprises

(a) injecting into said reservoir an aqueous fluid containing an effective amount of alkylaryl sulfonate surfactant prepared by

(i) alkylating a purified mixture of aromatic compounds consisting essentially of benzene, toluene, xylenes, and lesser amounts of ethylbenzene, trimethylbenzenes, and tetramethylbenzenes derived from a naphtha stream; and

(ii) sulfonating the resulting alkylated aromatic product;

(b) driving said fluid through said reservoir to displace oil from said reservoir; and

(c) recovering the displaced oil.

4,452,709

ANTISTATIC COMPOSITION

Lester A. Friedman, Atlanta; Cecil D. Kwong, Decatur, and James D. Faulkner, Atlanta, all of Ga., assignors to Lester Laboratories, Inc., Atlanta, Ga.

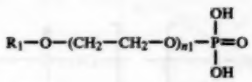
Filed Oct. 9, 1981, Ser. No. 310,352

Int. Cl.³ D06M *13/32*; H01B *1/12*

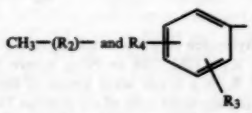
U.S. Cl. 252—8.9 28 Claims

1. An antistatic composition comprising an aqueous solution containing

(a) an anionic organic phosphate surfactant of the formula



wherein R_1 is selected from the group consisting of



wherein —(R_2)— is selected from the group consisting of saturated and unsaturated branched and linear groups having 4 to 18 carbon atoms, and wherein R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen and branched and linear alkyl of 4 to 12 carbon atoms,

and wherein n_1 is an integer of 4 to 14, and

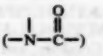
(b) disodium phosphate, wherein the weight ratio of ingredient (a) to ingredient (b) is from about 1:20 to about 20:1.

4,452,710
FUNCTIONAL FLUID

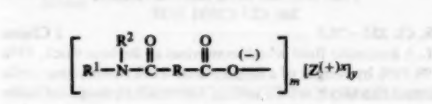
Mark A. Williams, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 236,330, Feb. 20, 1981, Pat. No. 4,379,063. This application Sep. 22, 1982, Ser. No. 421,618
The portion of the term of this patent subsequent to Aug. 5, 2000, has been disclaimed.
Int. Cl.³ C09K *15/22*; C10M *1/06, 3/04*; C23F *11/10*
U.S. Cl. 252—33.6 19 Claims

1. A corrosion inhibiting aqueous functional fluid composition having high resistance to separation during storage and having a pH in the range of from 8 to 12 comprising (a) water, (b) a surface active, corrosion inhibiting, water soluble or dispersible organic amine salt of a water insoluble carboxylic acid terminated amide having one amide linkage



per molecule, and (c) a second surface active agent wherein (b) has the following formula



(I)

where

R is a divalent monoethylenically unsaturated C_2 to C_3 aliphatic radical having two free valences in a cis stereo configuration,

R^1 is a monovalent organic radical selected from the group consisting of

(a) a monovalent C_7 to C_{10} aliphatic group having at least one methyl or ethyl branch or a monovalent heteroaliphatic group having at least one methyl or ethyl branch and the formula $R^3—OR^4)_n$ (II) where in R^3 is a straight chain or a methyl or ethyl branched C_6 to C_{12} alkyl radical, R^4 is a C_2 to C_3 alkylene radical and n is 1 to 2 when R^2 is hydrogen,

(b) a monovalent C_1 to C_{11} straight or branched chain aliphatic radical when R^2 is a C_1 to C_{11} straight or branched chain monovalent aliphatic radical with the proviso that R^1+R^2 shall have a combined total of from 8 to 12 carbon atoms and at least one of R^1 or R^2 shall have at least 5 carbon atoms,

R^2 is hydrogen or a monovalent C_1 to C_{11} branched or straight chain aliphatic group,

Z is a nitrogen containing cation having at least one hydrogen attached to the nitrogen, a positive charge equal to x and selected from the group consisting of cations of a water soluble alkanolamine having 2 to 4 carbon atoms in the alkanol group and C_2 to C_6 alkyl amine,

x is 1 to 3,

y is 1 and

m is 1 to 3.

2. A functional fluid composition according to claim 1 further containing (d) a water soluble or dispersible lubricant.

4,452,711
AQUEOUS METALWORKING LUBRICANT CONTAINING POLYOXYPROPYLENE-POLYOXYETHYLENE-POLYOXYPROPYLENE BLOCK COPOLYMERS

Joseph T. Laemmle, Delmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 20, 1983, Ser. No. 459,316
Int. Cl.³ C10M *3/26*
U.S. Cl. 252—49.3 20 Claims

1. A lubricant composition comprising

(a) about 1.0–20 wt% of a water-soluble mixture of polyoxyethylene-polyoxypropylene block copolymers containing a single polyoxyethylene chain and two polyoxypropylene chains attached to the polyoxyethylene chain, the average molecular weight of the polyoxypropylene chains in the mixture being at least 900 and the polyoxyethylene chains in the mixture constituting about 10–80 wt% of the mixture;

(b) about 0.5–10 wt% of a water-soluble carboxylic acid of the general formula

$$C_mH_{2m-n-r+2}(COOH)_r$$

where m is an integer from 11 to 36, n=0, 2, 4 or 6 and r=1 or 2;

(c) about 0.5–10 wt% of a water-soluble alkanolamine; and

(d) remainder, water.

16. A metalworking lubricant composition suitable for hot rolling of aluminum and aluminum alloy material at a temperature of about 450–1000° F., said composition also being suitable for cold rolling of aluminum and aluminum alloy material, said composition comprising

(a) about 1.0–20 wt% of a water-soluble mixture of polyoxyethylene-polyoxypropylene block copolymers containing a single polyoxyethylene chain and two polyoxypropylene chains attached to the polyoxyethylene chain, the average molecular weight of the polyoxypropylene chains in the mixture being about 1000 to 3100 and the polyoxyethylene chains in the mixture constituting about 10–80 wt% of the mixture;

(b) about 0.5–10 wt% of a saturated or monounsaturated C_{12} to C_{20} monocarboxylic acid;

(c) about 0.5–10 wt% of a water-soluble alkanolamine;

(d) an antifoam agent; and

(e) remainder, water.

4,452,712
METALWORKING WITH AN AQUEOUS SYNTHETIC LUBRICANT CONTAINING POLYOXYPROPYLENE-POLYOXYETHYLENE-POLYOXYPROPYLENE BLOCK COPOLYMERS

Joseph T. Laemmle, Delmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 20, 1983, Ser. No. 459,317
Int. Cl.³ C10M *3/26*
U.S. Cl. 252—49.3 20 Claims

1. A method of metalworking comprising the steps of

(a) applying to a metal object a synthetic aqueous solution lubricant composition

(1) about 1.0–20 wt% of a water-soluble mixture of polyoxyethylene-polyoxypropylene block copolymers containing a single polyoxyethylene chain and two polyoxypropylene chains attached to the polyoxyethylene chain, the average molecular weight of the polyoxypropylene chains in the mixture being at least 900 and the polyoxyethylene chains in the mixture constituting about 10–80 wt% of the mixture,

(2) about 0.5–10 wt% of a water-soluble carboxylic acid of the general formula

$$C_mH_{2m-n-r+2}(COOH)_r$$

where m is an integer from 11 to 36, n=0, 2, 4 or 6 and r=1 or 2,

(3) about 0.5–10 wt% of a water-soluble alkanolamine, and

(4) water; and

(b) performing a metalworking operation on the metal object.

20. A method of hot rolling or cold rolling a metal object comprising aluminum or an aluminum alloy, said method comprising the steps of

(a) applying to the object a synthetic aqeuous solution lubricant composition comprising

(1) about 2.5–10 wt% of a water-soluble mixture of polyoxyethylene-polyoxypropylene block copolymers containing a single polyoxyethylene chain and two polyoxypropylene chains attached to the polyoxyethylene chain, the average molecular weight of the polyoxypropylene chains in the mixture being about 1000 to 3100 and the polyoxyethylene chains in the mixture constituting about 10–80 wt% of the mixture,

(2) about 0.5–5 wt% of a saturated or monounsaturated C_{12} to C_{20} monocarboxylic acid,

(3) about 0.5–3 wt% of a water-soluble alkanolamine, the alkanolamine being present in sufficient concentration to provide at least one amine group for each carboxyl group in said acid,

(4) a non-silicone antifoam agent, and

(5) water; and

(b) hot rolling the object at a temperature of about 450°–1000° F. or cold rolling the object at about ambient temperature to 450° F.

4,452,713

INHIBITION OF THE STAINING OF PORCELAIN SURFACES BY MANGANESE

Leonard E. Small, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 1, 1982, Ser. No. 438,202
Int. Cl.³ C11D *3/395, 7/54*
U.S. Cl. 252—99 12 Claims

1. A dispensing article for use in the tank of a toilet which comprises a tank and a bowl, said article comprising independent first and second dispensing means which contain, respectively, a composition comprising a source of hypochlorite ion and a composition comprising glassy phosphate, wherein said respective dispensing means, upon flushing of the toilet, dispense into the flush water a sufficient quantity of their respective compositions to establish a hypochlorite concentration of about 3 ppm to about 20 ppm available chlorine and a glassy phosphate concentration of about 0.05 ppm to 10 ppm in the toilet bowl water at the end of the flush, and wherein said glassy phosphate has the formula $MO(MPO_3)_nM$ wherein M is sodium or potassium and n is a number of from about 6 to about 21.

4,452,714

BITUMINOUS COAL REAGENT AND FLOTATION PROCESS

James R. McCarthy, 623 Nevin Ave., Sewickley, Pa. 15143

Division of Ser. No. 838,237, Sep. 30, 1977, Pat. No. 4,308,132.
This application Apr. 16, 1979, Ser. No. 30,080
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—61 2 Claims

1. A bituminous coal floating reagent comprising:

a. phosphorous pentasulfide in amounts sufficient to establish a reducing environment around bituminous coal disposed in a liquid medium,

b. carbon disulfide as an intermediate solvent for dissolving the phosphorous pentasulfide,

c. zinc ethylenebis (dithiocarbamate) dissolved in the intermediate solvent in an amount effective to provide a zinc cation and

d. a liquid hydrocarbon having a paraffinic base and being in an amount sufficient to contain the phosphorous pentasulfide and zinc ethylenebis (dithiocarbamate) in solution, said liquid hydrocarbon including a polar solvent in an amount effective to promote the ionization which produces said cation.

4,452,715

HIGH PH COOLANT CONTAINING CARBONATE ION

Stanley T. Hirozawa, Birmingham, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 25, 1982, Ser. No. 436,261
Int. Cl.³ C09K *15/32*
U.S. Cl. 252—75 24 Claims

19. A metal corrosion inhibiting composition for use in aqueous liquids in contact with metals, said composition comprising about 55 to about 70 parts by weight of a water-soluble carbonate, about 10 to about 16 parts by weight of a water-soluble nitrate, about 12 to about 17 parts by weight of a water-soluble silicone-silicate copolymer, and about 8 to about 12 parts by weight of a water-soluble thiazole or triazole.

4,452,716

MIXED TRIALKYLPHOSPHINE OXIDES AS FUNCTIONAL FLUIDS

Richard W. Cummins, Cranbury, and Burton M. Baum, Princeton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 20, 1982, Ser. No. 451,361
Int. Cl.³ C10M *3/38*
U.S. Cl. 252—78.5 2 Claims

1. A hydraulic fluid which comprises as the base stock, 95% to 99.99% by weight of a liquid mixed trialkylphosphine oxide wherein the alkyls are C_6 to C_{10}, said trialkylphosphine oxide being obtained by phosphinating, in the presence of a free radical initiator, a mixture of the corresponding alpha olefin with phosphine in a molar ratio of 3 to 1 to form a mixed trialkylphosphine followed by oxidation of said mixed trialkylphosphine to the corresponding phosphine oxide and in admixture with the base stock about 0.01% to 5.0% by weight of hydraulic fluid additives.

4,452,717

BUILT LIQUID DETERGENT COMPOSITIONS AND METHOD OF PREPARATION

Ho T. Tai, Santes, France; David A. Reed, Port Sunlight, England; Nicolaas J. F. D. Verhoef, Maasland, Netherlands, and Fritz Deutscher, Dornbirn, Austria, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,094
Claims priority, application United Kingdom, Apr. 9, 1980, 8011744
Int. Cl.³ C11D *9/10, 15/04, 17/00*
U.S. Cl. 252—109 2 Claims

1. A method for preparing a homogeneous aqueous liquid detergent composition containing 22 to 35% by weight of sodium tripolyphosphate and 6 to 15% by weight of an active detergent mixture comprising:

(a) a water-soluble anionic sulphonate or sulphate detergent;

(b) an alkali metal soap of fatty acids having 12 to 18 carbon atoms; and

(c) a nonionic detergent,

characterized in that the weight ratio of (a):(b):(c) is within the range of (5.5–8.5):(0.5–3):(1.5–3) and that the composition is a pourable liquid having a viscosity of 0.35 to 1.0 Pa s at 20° C. and 21 seconds^{-1} shear rate, and remaining stable after at least two 24-hour cycles of from −4° C. to ambient temperature; comprising:

mixing said anionic sulphonate or sulphate detergent and said soap with water to form an aqueous mixture;

mixing said sodium tripolyphosphate with said mixture to form a homogeneous mass, with continued stirring;

mixing said nonionic detergent with said homogeneous mass with continued stirring to form a final mixture; and

allowing said final mixture to cool with continued stirring to form a final product.

2. A product prepared by the process of claim 1.

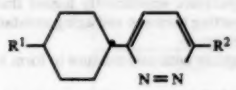
4,452,718

PYRIDAZINES

Martin Schadt, Seltisberg; Kuno Schleich, Zollikerberg, both of Switzerland, and Georg Trickes, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 12, 1982, Ser. No. 396,997
Claims priority, application Switzerland, Jul. 31, 1981, 4971/81; May 14, 1982, 3014/82
Int. Cl.³ C09K *3/34*; G02F *1/13*; C07D *237/02, 237/08*
U.S. Cl. 252—299.61 18 Claims

1. A compound of the formula



I

wherein R^1 is straight-chain alkyl of 1 to 12 carbon atoms, R^2 is alkyl, alkoxy, p-alkylphenyl, p-alkoxyphenyl or trans-4-alkylcyclohexyl, and said alkyl and alkoxy groups in R^2 each are straight-chain groups of 1 to 10 carbon atoms.

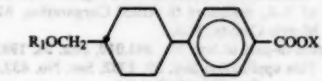
4,452,719

4-(TRANS-4'-ALKYLOXYMETHYLCYCLOHEXYL)BENZOIC ACID ESTERS

Hiromichi Inoue; Takashi Inukai, and Yasuyuki Goto, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

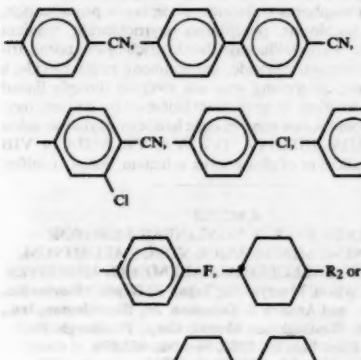
Filed May 10, 1983, Ser. No. 493,288
Claims priority, application Japan, May 11, 1982, 57-78737
Int. Cl.³ C09K *3/34*; C07C *69/78, 121/75*
U.S. Cl. 252—299.63 6 Claims

1. 4-(Trans-4'-alkyloxymethylcyclohexyl)benzoic acid esters having the general formula



(I)

wherein X represents



each represent an alkyl group of 1 to 10 carbon atoms.

6. A liquid crystal composition comprising a mixture of compounds at least one of which is a compound according to claim 1.

4,452,720

FLUORESCENT COMPOSITION HAVING THE ABILITY TO CHANGE WAVELENGTHS OF LIGHT, SHAPED ARTICLE OF SAID COMPOSITION AS A LIGHT WAVELENGTH CONVERTING ELEMENT AND DEVICE FOR CONVERTING OPTICAL ENERGY TO ELECTRICAL ENERGY USING SAID ELEMENT

Toshiaki Harada; Toshiyuki Hiramatsu, and Teizo Yamaji, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 270,022
Claims priority, application Japan, Jun. 4, 1980, 55-74180; Jul. 15, 1980, 55-95595; Jul. 21, 1980, 55-98633; Jul. 21, 1980, 55-98634; Jul. 28, 1980, 55-102357; Aug. 19, 1980, 55-112955; Aug. 20, 1980, 55-113364
Int. Cl.³ C09K *11/02*; G01T *1/10*
U.S. Cl. 252—301.16 16 Claims

1. A fluorescent composition consisting essentially of

(1) a polymer having a solubility parameter of at least about 9, and

(2) one or more organic fluorescent substances, at least one of said fluorescent substances being selected from the group consisting of dibenzanthrone pigments, isodibenzanthrone pigments, dibenzopyrenequinone pigments, anthanthrone pigments, perinone pigments, and perylene pigments and showing difficult solubility such that when 0.5 part by weight of said at least one fluorescent substance and 100 parts by weight of polypropylene are mixed in the molten state at 300° C. for 10 minutes and formed into a film having a thickness of about 1 mm, the film has a non-transmission index ETi (%), as defined by the following equation, of at least 7,

$$ETi = EAs - EAb$$

wherein EAs is the percent light absorption of said film at 800 nm, and EAb is the percent light absorption at 800 nm of a film of polypropylene having a thickness of about 1 mm, said fluorescent composition being characterized by the fact that when it is formed into a film having a thickness of about 1 mm, the film has a non-transmission index PTi (%), as defined by the following equation, of not more than 10,

$$PTi = PAs - PAb$$

wherein PAs is the percent light absorption at 800 nm of said film of the fluorescent composition, and PAb is the percent light absorption at 800 nm of a film having a thickness of about 1 mm of the polymer in the fluorescent composition.

4,452,721

SUSPENSIONS CONTAINING MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 202,740, Oct. 31, 1980, Pat. No. 4,374,702. This application Nov. 15, 1982, Ser. No. 441,689
Int. Cl.³ B01J *13/00*; A23D *5/02*
U.S. Cl. 252—310 4 Claims

1. A suspension of a finely divided dense solid selected from the group consisting of sand and coal material in a liquid suspending medium which swells cellulose, said suspension containing microfibrillated cellulose in an amount sufficient to produce a stable, homogeneous suspension.

4,452,722

SUSPENSIONS CONTAINING MICROFIBRILLATED CELLULOSE

Albin F. Turbak, Convent Station; Fred W. Snyder, Wharton, both of N.J., and Karen R. Sandberg, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 202,740, Oct. 31, 1980, Pat. No. 4,374,702. This application Nov. 15, 1982, Ser. No. 441,628
Int. Cl.³ A23L *1/04*; B01J *13/00*
U.S. Cl. 252—311 4 Claims

1. A suspension of a finely divided polymer material in water, said suspension containing microfibrillated cellulose in an amount sufficient to produce a stable, homogeneous suspension.

4,452,723

NON-SKID SURFACE COMPOSITIONS FOR PAPER PRODUCTS

Ronald Carstens, Anacortes, Wash., assignor to Key Tech Corporation, Redmond, Wash.

Division of Ser. No. 406,340, Aug. 9, 1982, Pat. No. 4,418,111, which is a continuation-in-part of Ser. No. 252,035, Apr. 8, 1981, abandoned. This application Aug. 31, 1983, Ser. No. 528,052
Int. Cl.³ B01J *13/00*; C09K *3/14*
U.S. Cl. 252—313 S 12 Claims

1. A composition comprising an alkaline aqueous sol of colloidal silica having a pH greater than 7 to approximately 11 and a mean particle size in the range of 10 to 150 millimicrons, and an agent selected from the group consisting of urea and thiourea.

4,452,724

ALKYL VANADATE COLOR IMPROVEMENT

George C. Clomo, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 29, 1982, Ser. No. 426,551
Int. Cl.³ C07F *9/00*
U.S. Cl. 260—429 R 10 Claims

1. A process for the color improvement of alkyl vanadates which comprises treating the alkyl vanadate with an effective amount of a nitrogen oxide oxidant to achieve the color improvement.

4,452,725

STABLE ELECTRICALLY CONDUCTING POLYMERS AND METHOD OF MAKING

Stephen T. Wellinghoff; Samson A. Jenekhe, both of Minneapolis, and Thomas J. Kedrowski, W. St. Paul, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 21, 1982, Ser. No. 420,757
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—500 6 Claims

1. An electrically conducting polymer comprising poly(N-alkyl 3',3 carbazolyl) doped with a compatible charge transfer acceptor to provide electrical conductivity, wherein said alkyl group is selected from the group consisting of ethyl and methyl or a combination thereof and wherein said charge transfer acceptor is selected from the group consisting of I_2, Br_2, Cl_2, F_2, TCNQ, DDQ, $NO^+BF_4^-$, chloranil and protic acids selected from the group consisting of HI, HBr, HCl, HF, H_2SO_4, $HClO_4$, and CCl_3COOH, or a combination thereof.

4,452,726

SELF-SEALING THERMALLY SENSITIVE RESISTOR AND METHOD OF MAKING SAME

Ponnusamy Palanisamy, and Keith E. Ewing, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1981, Ser. No. 294,723
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—518 7 Claims

1. A method of making a sealed thick film thermistor having a low to moderate electrical resistivity comprising:

forming a mixture containing, by weight, at least about 25% semiconductive oxide powder, 5–30% of an inorganic sintering aid, and 30–60% of a powdered glass that has a softening point temperature significantly higher than the sintering aid for imparting abrasion and aging resistance to the oxide after sintering;

blending an organic vehicle with said mixture to form a fluid composition;

applying a film of said fluid composition to a refractory surface;

sintering the film predominantly below said softening point temperature to establish a desired film electrical resistivity and change therein with temperature change;

during sintering, and after acquisition of the desired electrical resistivity properties is assured, raising sintering temperature high enough to soften the powdered glass and allow it flow; and

reducing sintering temperature below said softening point temperature before the flowed glass substantially interacts with the sintered oxides and/or sintering aid, effective to increase film abrasion and aging resistance without significantly adversely affecting film electrical resistivity properties.

4,452,727

SOLUTION OF A CHALCOGEN-CONTAINING POLYMER AND PROCESS OF FORMING CONDUCTING POLYMER ARTICLES THEREFROM

Jane E. Frommer, Mendham Township, Somerset County; Ronald L. Elsenbaumer, Morristown, and Douglass S. Davidson, Dover, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 393,010, Jun. 28, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 432,045
Int. Cl.³ A01B *1/06*
U.S. Cl. 252—518 12 Claims

1. A solution comprising a solvent selected from the group consisting of arsenic trifluoride, arsenic trichloride, arsenic tribromide, phosphorus trifluoride, phosphorus pentafluoride, phosphorus trichloride, phosphorus oxytrichloride, titanium tetrachloride, boron trifluoride, boron trichloride, boron tribromide, antimony trichloride, and antimony pentachloride, a polymer solute comprising aromatic moieties directly linked by divalent, trivalent or tetravalent sulfur or by divalent oxygen and a dopant solute comprising a halide or oxyhalide anion of a group IIIA, IIIB, IVA, IVB, VA, VB, VIIIA or VIB metal or metalloid or of phosphorus, selenium, boron or sulfur.

4,452,728

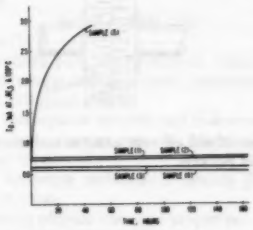
VOLTAGE STABLE NONLINEAR RESISTOR CONTAINING MINOR AMOUNTS OF ALUMINUM, BORON AND SELECTED ALKALI METAL ADDITIVES

William G. Carlson, Murrysville; Tapan K. Gupta, Monroeville, both of Pa., and Andrew S. Sweetana, Jr., Bloomington, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 18, 1983, Ser. No. 467,974
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—518 16 Claims

1. A sintered high voltage resistor body which can exhibit long lasting nonlinear V-I characteristics, consisting essentially of at least about 90 mole % of ZnO and up to about 10 mole % of additional metal oxides effective to provide electrical non-

linearity within the resistor and including the combination of: (1) from about 0.002 mole % to about 0.02 mole % of aluminum oxide, and (2) from about 0.005 mole % to 0.4 mole % of boron oxide and a total amount of from about 0.005 mole % to



about 0.3 mole % of at least one alkali metal oxide selected from the group consisting of sodium oxide, potassium oxide, rubidium oxide, and cesium oxide as essential ingredients, where all the oxides are homogeneously distributed through the resistor body.

4,452,729

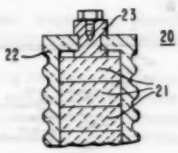
VOLTAGE STABLE NONLINEAR RESISTOR CONTAINING MINOR AMOUNTS OF ALUMINUM AND BORON

William G. Carlson, Murrysville; Tapan K. Gupta, Monroeville, both of Pa., and Andrew S. Sweetana, Jr., Bloomington, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1982, Ser. No. 439,016

Int. Cl.³ A01B 1/06

U.S. Cl. 252—518 **8 Claims**



1. A sintered high voltage resistor which can exhibit long lasting nonlinear V-I characteristics, consisting essentially of at least about 90 mole % of ZnO and up to about 10 mole % of additional metal oxides effective to provide electrical nonlinearity within the resistor, and including the combination of from about 0.002 mole % to about 0.02 mole % of aluminum oxide and from about 0.005 mole % to about 0.25 mole % boron oxide as essential ingredients.

4,452,730

ALKYL-4-CYCLOOCTENYL CARBONATES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES

Richard M. Boden, Ocean, and Michael Licciardello, Farmingdale, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

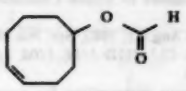
Division of Ser. No. 409,718, Aug. 19, 1982, Pat. No. 4,397,789, which is a continuation-in-part of Ser. No. 318,427, Nov. 15, 1981, abandoned. This application May 20, 1983, Ser. No. 496,649

Int. Cl.³ A61K 7/46; C11B 9/00

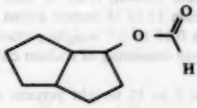
U.S. Cl. 252—522 R **4 Claims**

1. A process for producing a composition containing a major proportion of 4-cyclooctenyl alkyl carbonate comprising the steps of:

(i) refluxing a mixture of 1,5-cyclooctadiene and formic acid to prepare a mixture of 4-cyclooctenyl formate having the structure:

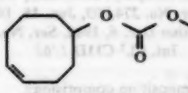


and bicyclooctanyl formate having the structure:

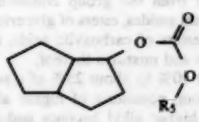


(ii) reacting the resulting mixture of 4-cyclooctenyl formate and bicyclooctanyl formate with a dialkyl carbonate defined according to the structure:

wherein R_4 is methyl or ethyl in the presence of an alkali metal alkoxide catalyst in order to produce a mixture containing a major proportion of compounds defined according to the structure:

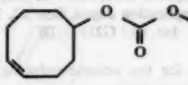


and a minor proportion of the compound defined according to the structure:



wherein R_4 and R_5 are the same and each represent methyl or ethyl.

3. A process for augmenting or enhancing the aroma of consumable material selected from the group consisting of perfume compositions and, colognes comprising the step of intimately admixing with a perfume composition base, a cologne base an aroma augmenting or enhancing quantity of at least one 4-cyclooctenyl alkyl carbonate defined according to the structure:



wherein R_4 represents an alkyl group selected from the group consisting of methyl and ethyl.

4,452,731

CLEANER FOR OVENS AND THE LIKE USING SODIUM ALPHA OLEFIN SULFONATE AND SODIUM SILICATE

Henry Watanabe, Vernon Hills, and Andrew Schultz, Deerfield, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Filed Aug. 11, 1982, Ser. No. 407,156
Int. Cl.[3] C11D *1/14, 3/08, 11/00*
U.S. Cl. 252—536 20 Claims

1. A homogeneous composition for oven cleaning and the like comprising on a 100 weight percent total composition basis:

(A) from about 3 to 14 weight percent of a sodium alpha olefin sulfonate derived from at least one alpha olefin containing from 12 to 18 carbon atoms per molecule,

(B) from about 0.15 to 0.7 weight percent of salt selected from the group consisting of sodium chloride and sodium sulfate,

(C) from about 7 to 15 weight percent of sodium silicate having an SiO_2 to Na_2O weight ratio of from 3.2:1 to 1:2, and

(D) from about 70.3 to 90 weight percent of water,

said composition being further characterized by

(1) having said components (A), (B) and (C) each substantially completely dissolved in said water, and

(2) having the sum of the respective weight percentages of each of said components (A), (B) and (C) at least such that the viscosity of the resulting such composition is at least about 1000 centipoises as measured with a Brookfield viscometer using a #3 spindle at 60 revolutions per minute at about 24° C.

4,452,732

SHAMPOO COMPOSITIONS

Raymond E. Bolich, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 274,009, Jun. 15, 1981, abandoned. This application Dec. 6, 1982, Ser. No. 446,840
Int. Cl.[3] C11D *1/62*
U.S. Cl. 252—547 8 Claims

1. A shampoo composition comprising:

(A) a quaternary ammonium compound having at least one unsaturated long chain substituent and having an iodine value of from about 10 to about 85;

(B) from about 1% to about 6% of a long chain acyl derivative selected from the group consisting of long chain amides, alkanol amides, esters of glycerine, esters of ethylene glycol, esters of carboxylic acids, esters of thiocarboxylic acids and mixtures thereof;

(C) from about 10% to about 25% of a surfactant selected from the group consisting of higher alkyl betaines and mixtures of higher alkyl betaines and higher alkyl sultaines; and,

(D) from about 50% to about 80% water;

wherein said quaternary compound is present at a level equal to from about 15% to about 40% of the level of said surfactant.

4,452,733

EQUIPMENT FOR VOLUME-REDUCING TREATMENT OF RADIOACTIVE WASTE

Susumu Horiuchi; Mikio Hirano; Satoshi Hirayama; Ryoichi Ishikawa, all of Hitachi, and Hajime Iinuma, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

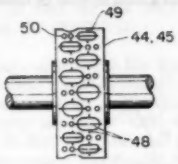
Filed Sep. 10, 1981, Ser. No. 301,100
Claims priority, application Japan, Sep. 12, 1980, 55-127808
Int. Cl.[3] G21F *9/08*
U.S. Cl. 252—632 15 Claims

1. An equipment for the volume-reducing treatment of a radioactive waste, comprising:

means for drying said radioactive waste;

means for milling said radioactive waste thus dried; and

a pelletizer for press-molding said radioactive waste thus milled by press rolls, each having plural pockets on the



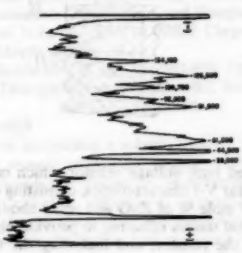
surface thereof and air vent grooves communicating with each of said pockets.

4,452,734

HERPES SUBUNIT VACCINE

Vivian M. Larson, Harleysville, and E. Dale Lehman, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 120,409, Feb. 11, 1980, Pat. No. 4,374,127, which is a continuation-in-part of Ser. No. 934,554, Aug. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,598, Sep. 19, 1977, abandoned. This application Aug. 11, 1982, Ser. No. 407,197
Int. Cl.[3] A61K *39/245;* C07G *7/00*
U.S. Cl. 260—112 R 21 Claims



1. An antigenic, immunogenic HSV2 subunit consisting essentially of 3 groups of viral directed, membrane-bound glycoproteins which are soluble in the presence of a nonionic or anionic surfactant, the first group being from about 110,000 to about 130,000 daltons, the second group being from about 83,000 to about 90,000 daltons and the third group being from about 55,000 to about 60,000 daltons, the subunit being free of detectable DNA and being capable of inducing neutralizing antibody and of being administered as a vaccine.

5. A process of preparing an antigenic, immunogenic, herpes virus subunit comprising

infecting the cells of a tissue culture with a herpes virus capable of growing in the tissue culture,

incubating the infected tissue culture until a majority of the cells exhibit cytopathic effect,

contacting the infected cells with a nonionic or anionic surfactant to obtain an extract,

hydrolyzing substantially all of intact double-stranded DNA in the extract,

and fractionating the extract by chromatographic means.

4,452,735

LEUKORECRUITIN

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,923

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034529

Int. Cl.³ C07G 7/00

U.S. Cl. 260—112 B 37 Claims

1. A substantially pure, serum-derived, leukocytosis-inducing and leukocyte-recruiting protein, leukorecruitin, having the following biological effects:

a. positive leukocytosis reaction and leukocyte recruitment from the bone marrow into the blood of animals and humans in vivo;

b. positive leukocyte mobilization directly from the bone marrow in vitro;

and the following physico-chemical properties:

a. molecular weight about 8,500 daltons;

b. a single polypeptide chain;

c. anodic electrophoretic migration at pH 7.4 in acrylamide matrices;

d. soluble in aqueous media, including 20% ethanol, at pH's between about 4 and 10;

e. insoluble in $(NH_4)_2SO_4$ solutions having concentrations higher than 61% corresponding to 2.5 mol $(NH_4)_2SO_4/l$;

f. constant temperature coefficient of solubility in ammonium sulfate solutions between −10° C. and +50° C.;

g. crystallizes in the form of double-refractive, optically anisotopic crystals from ammonium sulfate solutions at ammonium sulfate concentrations higher than 61%;

h. insoluble in chloroform, benzene, xylene and other apolar non-aqueous and water-immiscible solvents;

i. denatures in chloroform, benzene and xylene resulting in destruction of conformational structure and loss of biological activity;

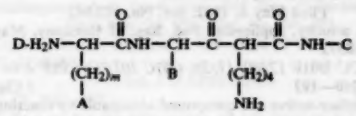
j. contains tyrosine, tryptophan, phenylalanine, alanine, glycine, lysine, serine, valine, glutamic acid, arginine, and leucine;

k. adsorbs reversibly on anion- and cation-exchangers, calcium phosphate gels and hydroxyapatite and is capable in native form of volume-partition chromatography; and

l. possesses extinction coefficients according to Table I:

TABLE I

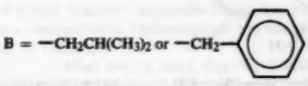
Wavelength, nm	$E_{1\ mg/ml}$, 1 cm(H_2O, 20° C.) ± 6%
250 (min.)	0.36
260	0.42
277 (max.)	0.54
280	0.53
290	0.32
400–1000	0
$E_{280}E_{260}$	1.26.



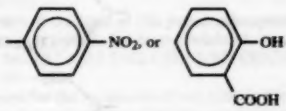
wherein

m = 1, 2, 3 or 4

A = −CNHR₁, −COR₁, −NHCR₂ or −NHSO₂R₂

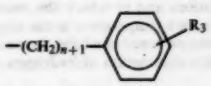


B = −CH₂CH(CH₃)₂ or −CH₂−



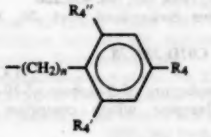
C = −NO₂, or −OH, −COOH

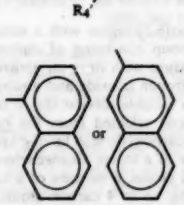
wherein

R_1 =  (n = 0, 1, 2 or 3, R_3 = H or CH_3),

$-(CH_2)_n-CH(CH_3)_2$ (n = 0, 1, 2 or 3)

R_2 = $-(CH_2)_{n+1}-CH_3$ (n = 0, 1, 2 or 3)

 (n = 0, 1, 2 or 3, R_4, R_4' and R_4'' are H or CH_3),



4,452,736

SUBSTRATES FOR MEASURING PLASMIN

Takeshi Nagasawa; Katsumasa Kurolwa; Katsuyuki Takabayashi, and Yoshio Nakamura, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Sep. 13, 1982, Ser. No. 417,377

Claims priority, application Japan, Oct. 14, 1981, 56-163649

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R 1 Claim

1. A novel substrate for measuring plasmin which has chromophoric and fluoroescent properties on plasmin and plasmin-like enzymes, which is represented by a compound of the following general formula or a salt thereof:

4,452,737
SURFACE-ACTIVE AZO COMPOUNDS

Adolf Schmidt, Cologne, and Ernst Roos, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

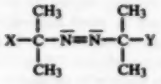
Filed May 3, 1982, Ser. No. 373,962

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118372

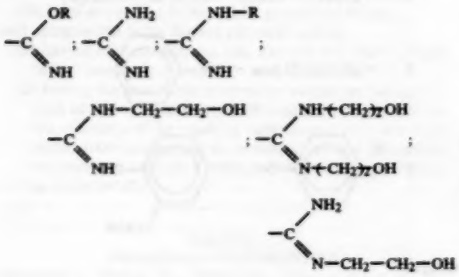
Int. Cl.³ B01F *17/00, 17/26;* **C07C** *107/02;* **C08F** *4/04*

U.S. Cl. 260—192 **3 Claims**

1. A surface-active azo compound obtainable by reacting an azo compound corresponding to the formula:



in which X and Y are the same or different and each represents one of the following:



and

R represents C_1–C_4-alkyl, with at least one C_{10}–C_{18}-paraffin disulphonic acid dichloride in aqueous medium or in a solvent or a solvent mixture which is inert to the reactants under the process conditions and in which the reactants are at least partly soluble, at a temperature in the range of from 0° to 30° C. and in the presence of a base, the reaction being accompanied by the elimination of hydrogen chloride.

4,452,738
PROCESS FOR THE MANUFACTURE OF 5-CARBAMOYL-10-OXO-10,11-DIHYDRO-5H-DIBENZ[B,F]AZEPINE

Ernst Aufderstaar, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 198,886, Oct. 20, 1980, abandoned. This application May 26, 1983, Ser. No. 498,226

Claims priority, application Switzerland, Oct. 30, 1979, 9703/79

Int. Cl.³ C07D *223/28*

U.S. Cl. 260—239 D **1 Claim**

1. A process for the manufacture of 5-carbamoyl-10-oxo-10,11-dihydro-5H-dibenz[b,f]azepine which comprises the steps of:

(a) nitrating 5-cyano-5H-dibenz[b,f]azepine with a nitrating agent selected from the group consisting of dinitrogen trioxide optionally in admixture with oxygen, dinitrogen tetroxide, a mixture of dinitrogen trioxide and dinitrogen tetroxide, or nitric acid in a suitable solvent that is stable under the reaction conditions selected from the group consisting of a lower alkanecarboxylic acid having up to 4 carbon atoms, an anhydride of a lower alkanecarboxylic acid having up to 4 carbon atoms, a mixture of a lower alkanecarboxylic acid having up to 4 carbon atoms and the anhydride thereof, and wherein the ratio of starting material to solvent (weight/volume) is from 1:3 to 1:30, in a temperature range of approximately 0–120° so to obtain 5-cyano-10-nitro-5H-dibenz[b,f]azepine,

(b) hydrolyzing the 5-cyano group to the 5-carboxamide group with an acidic agent selected from the group consisting of acetic acid, sulphuric acid or a mixture thereof, formic acid, boron trifluoride in the form of a solution in acetic acid or in the form of a discrete compound with acetic acid of the formula $BF_3.2CH_3COOH$, optionally in the presence of chlorobenzene as further inert solvent,

(c) treating the reaction mixture or the corresponding BF_3 addition compound, optionally isolated in pure form, with water so to obtain 5-carbamoyl-10-nitro-5H-dibenz[b,f]azepine,

(d) reducing the 10-nitro group in the compound obtained to the 10-isonitroso group with a reducing agent selected from the group consisting of catalytically activated hydrogen in a mixture of acetic acid and hydrochloric acid as solvent, or iron in a suitable solvent selected from the group consisting of a mineral acid or a lower alkanecarboxylic acid having up to 4 carbon atoms, or a mixture of acetic acid and hydrochloric acid, and

(e) hydrolyzing the isonitroso compound by means of water so as to obtain 5-carbamoyl-10-oxo-10,11-dihydro-5H-dibenz[b,f]azepine.

4,452,739
1,3,3,5,7,7-HEXANITROPERHYDRO-1,5-DIAZOCINE, N-NITROSO ANALOGS THEREOF, AND PROCESSES FOR THEIR PREPARATION

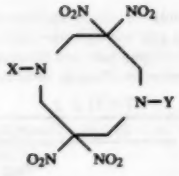
Dorothy A. Cichra; Horst G. Adolph, both of Silver Spring, and Mortimer J. Kamlet, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1983, Ser. No. 481,042

Int. Cl.³ C07D *245/02*

U.S. Cl. 260—239 BC **12 Claims**

1. A nitroorganic compound of the formula



wherein x and y vary independently and are selected from the group consisting of —NO and $—NO_2$.

5. A process for preparing 3,3,7,7-tetranitro-1-nitrosoperhydro-1,5-diazocine comprising the following steps:

(1) forming an aqueous solution of

(a) ammonia,

(b) formaldehyde, and

(c) bis(2,2-dinitroethyl)nitrosamine;

(2) lowering the pH of the solution until the solid 3,3,7,7-tetranitro-1-nitrosoperhydro-1,5-diazocine product is formed; and

(3) isolating the product.

7. The process of claim 5 wherein acetic acid is used to lower the pH of the aqueous solution in step (2).

9. The process of claim 5 further comprising the steps thereafter of:

(4) nitrosating the 3,3,7,7-tetranitro-1-nitrosoperhydro-1,5-diazocine in from about 55 to about 70 percent nitric acid to form 3,3,7,7-tetranitro-1,5-dinitrosoperhydro-1,5-diazocine product; and

(5) isolating the 3,3,7,7-tetranitro-1,5-dinitrosoperhydro-1,5-diazocine.

11. The process of claim 5 further comprising the steps thereafter of:

(4) nitrating the 3,3,7,7-tetranitro-1-nitrosopehydro-1,5-diazocine in a mixture of acetic anhydride and 90% nitric acid at a temperature of from about 0° C. to about 5° C. to form 3,3,5,7,7-pentanitro-1-nitrosoperhydro-1-5-diazocine; and

(5) isolating the 3,3,57,7-pentanitro-1-nitrosoperhydro-1,5-diazocine.

4,452,740

PREPARATION OF CHLORINATED PHTHALOCYANINES

Louis J. Pepoy, Holland, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 23, 1982, Ser. No. 401,088

Int. Cl.³ C09B 47/10

U.S. Cl. 260—245.83 3 Claims

1. A process for the halogenation of copper phthalocyanine comprising reacting at a temperature of about 75° to 200° C., a pressure of about 1 to 100 bars and for a time period of about 0.5 to 24 hours, a mixture of copper phthalocyanine blue, about 2 to 2000 parts sulfuryl chloride, about 0.05 to 50 parts sulfur monochloride, about 0.025 to 25 parts aluminum chloride and about 0.025 to 25 parts cuprous chloride, all by weight per part of copper phthalocyanine blue whereby a green copper phthalocyanine compound is obtained.

4,452,741

A-39183 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

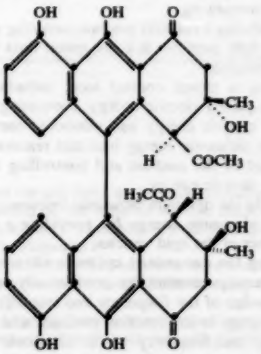
Kay F. Koch, North Salem, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 232,921, Feb. 9, 1981, Pat. No. 4,410,628, which is a division of Ser. No. 90,386, Nov. 1, 1979, Pat. No. 4,283,390. This application Feb. 23, 1983, Ser. No. 469,197

Int. Cl.³ C07C 50/36

U.S. Cl. 260—351 1 Claim

1. A-39183 factor A, which has the structure



4,452,742

PROCESS FOR THE PREPARATION OF 4,4'-DIAMINO-1,1'-DIANTHRIMIDES

Josef Stawitz, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 29, 1982, Ser. No. 445,293

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148693

Int. Cl.³ C01C 50/16

U.S. Cl. 260—367 13 Claims

1. Process for the preparation of 4,4'-diamino-1,1'-dianthrimides, characterized in that a mixture of an optionally substituted 1,4-diaminoanthraquinone and an optionally substituted 1-aminoanthraquinone in 30–60% strength H_2SO_4, is oxidized with peroxomonosulphuric acid or peroxodisulphuric acid, and the product is then reduced.

4,452,743

PROCESS FOR THE SEPARATION OF OILS AND/OR PHOSPHATIDYLETHANOLAMINE FROM ALCOHOL SOLUBLE PHOSPHATIDYLCHOLINE PRODUCTS CONTAINING THE SAME

Bernd-Rainer Günther, Bergheim-Fliesteden, Fed. Rep. of Germany, assignor to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,322

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047011

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.³ A23J 7/00; C07F 9/02; C11C 3/00

U.S. Cl. 260—403 3 Claims

1. Process for the separation of oils and/or phosphatidylethanolamine from phosphatidylcholine products containing the same with the production of phosphaditylcholine products containing oils and phosphatidylethanolamine in definite diminished amounts, characterized in that the solution of an alcohol soluble phosphatidycholine product containing oils and/or phosphatidylethanolamine in a lower alkanol containing from 1 to 4 carbon atoms or in a mixture of several such alcohols, said alkanol or mixtures containing up to 20% by weight of water, at an elevated temperature below 60° C. are put on to a silicic acid gel column, the column is eluated at this temperature with a lower alkanol having from 1 to 4 carbon atoms or a mixture of such alkanols, said alkanol or mixture containing up to 20% by weight of water, a preeluate is collected containing oils and/or phosphatidylethanolamine in such an amount as the content in the phosphatidylcholine product is desired to be diminished and, separate therefrom, a main eluate is collected and the solvent is separated from said main eluate.

4,452,744

OLIVE OIL RECOVERY

Harvey E. Finch, Foster City, and Salvatore P. Trapanese, Millbrae, both of Calif., assignors to FPS Development Partnership, Sacramento, Calif.

Continuation-in-part of Ser. No. 220,170, Dec. 23, 1980, Pat. No. 4,370,274. This application Feb. 4, 1982, Ser. No. 345,554

The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.

Int. Cl.³ C11B 1/06, 1/08

U.S. Cl. 260—412.2 2 Claims

1. A method for recovering olive oil from olives comprising:

separating olive pits from olives to obtain a pitless olive meat;

mixing an inert edible agent with the pitless olive meat to form an admixture, said agent being incompressible relative to the pitless olive meat;

introducing the admixture to an extraction zone while maintaining the meat at a temperature of at least about 80° F. to no more than about 110° F.;

withdrawing a liquid phase comprising water, olive oil, and a minor proportion of olive pulp from a first portion of the extraction zone;

withdrawing a substantially dry solid olive pulp from a second portion of the extraction zone;

separating the minor proportion of olive pulp from the liquid phase for obtaining a mixture comprising olive oil and water; and

separating water from the mixture for obtaining an olive oil free of water.

4,452,745

9-AMINOALKYLFLUORENES

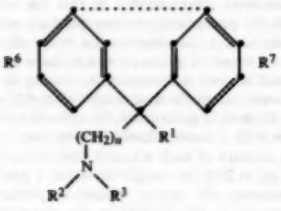
William B. Lacefield, Indianapolis, and Richard L. Simon, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 232,281, Feb. 6, 1981, Pat. No. 4,382,093, which is a division of Ser. No. 141,228, Apr. 17, 1980, Pat. No. 4,277,495, which is a continuation-in-part of Ser. No. 19,533, Mar. 12, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 426,491

Int. Cl.³ C07C *121/78, 87/28, 103/28*

U.S. Cl. 260—465 E **29 Claims**

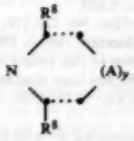
1. A compound of the formula



wherein:

R^1 is hydroxy, cyano, or $CONR^4R^5$ in which R^4 and R^5 independently are hydrogen or C_1–C_6 alkyl;

R^2 and R^3 independently are hydrogen, C_1–C_6 alkyl, CH_2C_2–C_5 alkenyl, phenyl-C_1–C_3 alkyl, or taken together with the nitrogen to which they are attached are a cyclic group of the formula



in which R^8 is hydrogen or C_1–C_4 alkyl; A is CH_2, O or NH; and y is zero or one; provided that R^2 is hydrogen when R^1 is hydroxy;

n is 3, 4 or 5;

R^6 and R^7 independently are hydrogen, C_1–C_4 alkyl or halogen,

and the pharmaceutically acceptable salts thereof.

4,452,746

POLYMERIZABLE AMINO ACID COMPOUNDS AND THEIR PRODUCTION

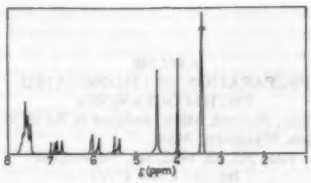
Shinichi Ishikura, Kyoto; Tamotsu Yoshioka, Osaka, and Ryuzo Mizuguchi, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 253,143, Apr. 10, 1981, abandoned. This application Apr. 28, 1982, Ser. No. 372,729

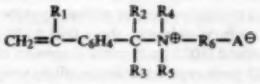
Claims priority, application Japan, Apr. 10, 1980, 55-47651; Apr. 10, 1980, 55-47652

Int. Cl.³ C07C *143/58*

U.S. Cl. 260—501.12 **8 Claims**



1. A polymerizable amino acid compound of the formula:



(I)

wherein R_1, R_2 and R_3 are each hydrogen or methyl, R_4 is C_1–C_{20} alkyl substituted with at least one hydroxyl, R_5 is hydrogen or C_1–C_{20} alkyl unsubstituted or substituted with at least one hydroxyl and with or without —O— or —COO— in the alkyl chain, or when R_4 and R_5 are taken together with the nitrogen atom to which they are attached, they represent a nitrogen atom containing heterocyclic group, R_6 is an alkylene group having not more than 6 carbon atoms and A is $—SO_3—$.

4,452,747

METHOD OF AND ARRANGEMENT FOR PRODUCING LIPID VESICLES

Klaus Gersonde, Preusweg 69, D-5100 Aachen, and Wilfried Schäl, Tannenwaldweg 27, D-6380, Bad Homburg, both of Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,173

Int. Cl.³ B01J *13/02*; B01F *11/02*

U.S. Cl. 264—4.1 **27 Claims**

1. In a method of producing lipid vesicles from biological membranes or lipid suspensions by ultra-sonic treatment,

the steps comprising,

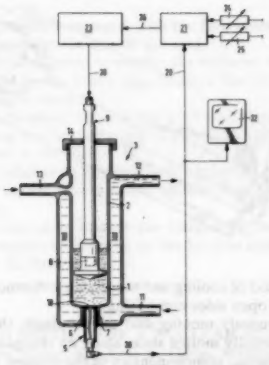
accommodating a reaction medium including a lipid suspension or lipid particles in a dispersion fluid inside a treatment container;

establishing a closed control loop, including generating high-frequency electric energy, converting the high frequency electric energy into ultrasonic energy, transmitting the ultrasonic energy into said reaction medium for treatment of the medium and controlling said high frequency electric energy;

determining the optimum ultrasonic frequency and intensity of said ultrasonic energy for providing a desirable size parameter of the lipid vesicles;

maintaining the determined optimum ultrasonic frequency and intensity constant by continuously measuring the actual value of the frequency and intensity of the ultrasonic energy in the reaction medium, and adjusting the intensity and frequency of the ultrasonic treatment in dependence upon the thus measured actual value.

13. An arrangement for producing lipid vesicles from biological membranes or lipid suspensions,
comprising in combination,
a treatment container arranged to accommodate a reaction medium including a lipid suspension or lipid particles in a dispersion fluid;
means for establishing a closed control loop, including means for generating high frequency electric energy conversion means for converting the high frequency electric energy into ultrasonic energy,



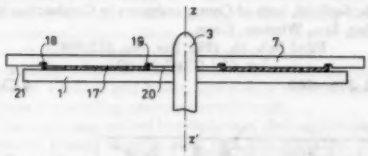
means for transmitting the ultrasonic energy into said reaction medium, means for measuring the effective ultrasonic energy in the reaction medium and for controlling said high frequency electric energy; and
means for determining and maintaining the optimum frequency and intensity of said ultrasonic energy such as to provide for a desirable size parameter of the lipid vesicles, said determining and maintaining means including measuring means for measuring the actual value of a frequency and intensity of an ultrasonic field in the reaction medium obtained from said ultrasonic energy, and adjusting means for adjusting the intensity and frequency of.

4,452,748

PROCESS FOR OBTAINING A COPY DISK FROM AN ORIGINAL RECORDING CARRIED BY A MATRIX

Francois Lange, and Roger Rascle, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 23, 1982, Ser. No. 422,083
Claims priority, application France, Nov. 6, 1981, 81 20854
Int. Cl.³ B29C *27/00*
U.S. Cl. 264—25 **14 Claims**



1. A process for obtaining an information-carrying disk, the information being in the form of surface micro-zones in an annular recording area, by moulding from an original recorded matrix, which comprises:
spreading a substance between a substrate and an original disk so as to transfer to said substrate an impression of said original disk;
adhering said substance to said substrate during hardening of said substrate wherein said recording area extends between inner and outer intact areas of said substrate, said substrate having at least one recessed stop area formed therein;
seperating the recording area and the intact areas by said at least one stop area; and
containing all excesses of said substance by said stop area upon said transfer of said substrate of said impression of said original disk.

8. A process of obtaining an information-carrying disk, the information being in the form of surface micro-zones in an annular recording area, by moulding from an original recorded matrix, which comprises:
spreading a substance between a substrate and an original disk to as to transfer to said substrate an impression of said original disk;
adhering said substance to said substrate during hardening of said substrate wherein said recording area extends between inner and outer intact areas of said substrate, said original disk having at least one recessed stop area formed therein;
separating the recording area and the intact areas by said at least one stop area; and
containing all excesses of said substance by said stop area upon said transfer to said substrate of said impression of said original disk.

4,452,749

METHOD OF REPAIRING HOT REFRACTORY BRICK WALLS

Robert E. Kolvek, Ontario, Canada; Henry R. Bronke, Buffalo, N.Y.; Nicholas W. Foit, Jr., Hamburg, N.Y., and Robert J. Kish, Tonawanda, N.Y., assignors to Modern Refractories Service Corp., N.Y.; National Steel Corp., Del. and Republic Steel Corp., N.J.

Filed Sep. 14, 1982, Ser. No. 417,983
Int. Cl.³ F27D *1/16*
U.S. Cl. 264—30 **28 Claims**

1. A method of repairing a damaged internal surface portion of a wall of a normally closed chamber, the wall being constructed of refractory brick joined by a heat resistant mortar and normally being maintained at an operating temperature of at least 2000° F., the method comprising the steps of
initially opening the chamber and cooling the wall to be repaired to a temperature internally of the wall below about 1900° F. and to a surface temperature in the area to be repaired of no less than about 500° F. and maintaining the temperature of the wall within this range throughout the repair,
entering the chamber and removing the damaged brick defining the internal surface portion requiring repair,
manually rebuilding the portion of the wall from within the chamber by replacing the removed brick with new brick utilizing a high temperature resistant mortar, the new brick having a coefficient of thermal expansion compatible with the existing brick in the wall upon reheating the wall from

such cooled temperature to its normal operating temperature, and

closing the chamber and reheating the refractory wall to its normal operating temperature.

4,452,750

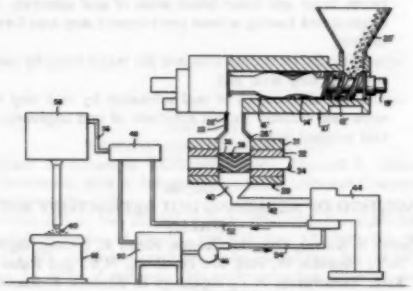
LOW ENERGY PROCESSING OF THERMOPLASTIC POLYMERS

Richard H. Handwerk, South Somerville, N.J.; Alfred Mendelsohn, Brooklyn, N.Y., and Urho S. Haapala, Middlesex, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 262,942, May 12, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 483,850

Int. Cl.³ B29C *3/02*

U.S. Cl. 264—40.3 4 Claims



1. In the operation of a melter/mixer-gear pump system for the processing of synthetic thermoplastic materials, the improvement which comprises providing close coupling of said melter/mixer to said gear pump arranged in a system and by employing the pressure between the melter/mixer and the gear pump as the parameter controlling, in a proportional relationship, the speed of said gear pump, the energy transmitted to and the consequent temperature of said materials passing through said melter/mixer.

4,452,751

STYRENA POLYMER FOAM MADE WITH α-POLYOLEFIN ADDITIVES

Thomas W. McCullough, Newark, and Bradley D. Stevens, Frazeysburg, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1982, Ser. No. 352,668

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.5 5 Claims

1. In a process for preparing polyvinyl aromatic foam material by heat plastifying polyvinyl aromatic material in an extruder, mixing said material with a volatile blowing agent, extruding the mixture into a zone of lower pressure sufficient to expand the extruded mixture with the resultant formation of foam material and cooling said foam material, wherein the improvement comprises:

incorporating into the heat plastified polyvinyl aromatic material a compatible amount of a blend of materials, said blend comprising from about 5 to about 100 percent by weight alpha-polyolefin, based on blend weight, and from about 95 to about 0 percent by weight polyvinyl aromatic material, based on blend weight, whereby a generally uniform, closed cell foam material is produced, the foam material having a generally smooth skin which has improved solvent resistance as compared to a polyvinylaromatic foam material not having incorporated therein the blend of materials.

4,452,752

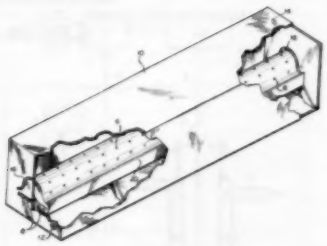
METHOD AND APPARATUS FOR EXTRUDING THERMOPLASTIC SHAPE

Joseph R. Harder, and James E. Keesling, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1982, Ser. No. 339,228

Int. Cl.³ B29D *7/20*

U.S. Cl. 264—555 10 Claims



1. A method of cooling and solidifying a thermoplastic shape having two open sides comprising:

(a) continuously moving said thermoplastic shape, in its at least partially molten state, along an elongated form having a contour complementary to the contour of one side of said two open sides of said thermoplastic shape;

(b) simultaneously with moving said thermoplastic shape, drawing a gaseous vacuum through said form and apertures therein in communication with said one side of said two open sides of said thermoplastic shape in a manner to maintain intimate contact between said one side of said thermoplastic shape and said form along the entire length of said form; and

(c) simultaneously with said moving of said thermoplastic shape and said drawing a vacuum, at least partially cooling said form by at least one of (1) circulating a liquid cooling medium through said form separately from said vacuum and (2) circulating a liquid cooling medium through a bath of said liquid cooling medium in contact with at least that side of said form opposite the side in contact with said thermoplastic shape;

(d) the other of said open sides of said thermoplastic shape being exposed to one of (1) atmospheric air and (2) at least a portion of said liquid cooling medium in said bath.

4,452,753

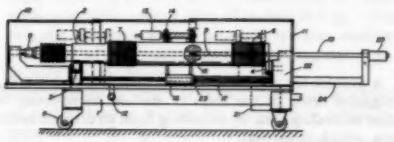
APPARATUS FOR CLEANING AND INSPECTING CLOSURE STUDS OF A NUCLEAR REACTOR VESSEL

Timothy H. Wentzell, South Windsor, and Lawrence J. Edwards, Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 26, 1982, Ser. No. 352,908

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—249 6 Claims



3. A cleaning and flaw-detecting system for nuclear reactor vessel closure studs, including,

a nuclear reactor vessel closure stud removed from service and requiring cleaning and inspection for flaws,

a support framework sufficiently sturdy to receive the stud in a horizontal position,
a bed within the framework characterized by load-bearing rollers extended parallel to each other within the framework in support of the stud as preparation for cleaning and inspection,
a lead screw mounted on the framework and extending parallel the stud axis and substantially the length of the stud axis,
a motor mounted on the framework and connected to simultaneously reversibly rotate the lead screw and the stud rollers,
a carriage threadably engaged with the lead screw so as to be carried parallel the axis of the stud,
cleaning brushes adapted to engage the surfaces of the stud and actuated by the lead screw to carry the brushes over the surfaces of the stud,
an enclosure mounted on the framework and about the stud and cleaning brushes in control of the debris brushed from the surfaces of the stud,
means on the enclosure adapted to be connected to a source of vacuum to remove the debris brushed from the surfaces of the stud,
and means adapted to inspect the surfaces of the stud for flaws subsequent to cleaning by the brushes and arranged to replace the brushes.

4,452,754

SHUTDOWN SYSTEM FOR A NUCLEAR REACTOR

Edward F. Groh, Naperville; Arne P. Olson, Western Springs; David C. Wade, Naperville, and Bryan W. Robinson, Oak Lawn, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 20, 1982, Ser. No. 340,905
Int. Cl.³ G21C *7/10*
U.S. Cl. 376—335 **1 Claim**

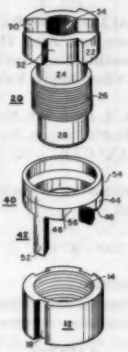
1. An ultimate shut down system for a nuclear reactor having fuel elements, comprising:
a plurality of hollow substantially spherical beads having a passageway extending therethrough, said beads comprised of first and second hemispherical mating shells of neutronically inert alloy, each shell having an aperture which defines a portion of said passageway;
substantially spherical reactor poison material contained in at least a few of said beads, said poison material having a channel extending entirely therethrough;
said first and said second hemispherical shells enclosing said reactor poison material such that said apertures of said first and said second hemispherical shells communicate with said channel of said reactor poison material to form said passageway;
a hollow core rivet having a hollow shaft extending therethrough, said rivet extending through said passageway of said bead and securing said hemispherical shells in mating engagement;
a flexible tether passing through said passageways of said plurality of beads so as fo form a bead chain therewith; and
washer-like means for securing said beads at spaced-apart points along said tether such that said beads are allowed to rotate about said tether while being captivated to prevent translation along said tether, successive ones of said beads contacting each other when said tether is flexed, so as to limit the bending radius of said bead-chain to a predetermined minimum.

4,452,755

FUEL ROD RETENTION DEVICE FOR A NUCLEAR REACTOR

Charles L. Hylton, Madison Heights, Va., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1982, Ser. No. 343,793
Int. Cl.³ G21C *7/08*
U.S. Cl. 376—364 **10 Claims**



1. A device for retaining a nuclear fuel rod in an aperture of a grillage of a nuclear fuel rod assembly comprising:
a support member to be affixed to an aperture of said grillage;
a retention member to be positioned to retain a fuel rod in said aperture of the grillage while allowing limited axial movement of said fuel rod with respect to the grillage;
means for releasably connecting said retention member to said support member in said retaining position; and
a locking element having means engageable with said retention member and said support member to lock said retention member in said retaining position to retain said fuel rod in said aperture.

4,452,756

METHOD FOR PRODUCING A MACHINABLE, HIGH STRENGTH HOT FORMED POWDERED FERROUS BASE METAL ALLOY

Keith C. McLeod, Iona Station, Canada, assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Jun. 21, 1982, Ser. No. 390,340
Int. Cl.³ B22F *3/26, 3/14*
U.S. Cl. 419—29 **16 Claims**

1. A method for producing a machinable, ductile high strength hot formed powdered ferrous metal alloy comprising:
providing a particulate mixture consisting of, in weight percent, from about 1.0 to about 3.0 percent copper, from about 0.16 to about 0.35 percent sulfur, from about 0.4 to about 0.8 percent carbon, with the balance being iron plus from 0 to about 2.0 percent incidental impurities;
forming said mixture into a preformed article having a predetermined configuration;
sintering said so-formed article at a temperature sufficient to produce the desired alloy; and
subjecting said sintered article to a heating and forming

treatment so as to produce a hot formed article having a density near theoretical.

9. A machinable, ductile high strength powdered ferrous based metal alloy which is produced by a process which comprises the steps of:

providing a particulate mixture consisting of, in weight percent, from about 1.0 to about 3.0 percent copper, from about 0.16 to about 0.35 percent sulfur, from about 0.4 to about 0.8 percent carbon, with the balance being iron plus from 0 to about 2.0 percent incidental impurities;

forming said mixture into a preformed article having a predetermined configuration;

sintering said so-formed article at a temperature sufficient to produce the desired alloy; and

subjecting said sintered article to a heating and forming treatment so as to produce a hot formed article.

4,452,757
COPPER ALLOY FOR RADIATORS

Susumu Kawauchi, Kanagawa; Junji Honda, Atsugi; Kiyoaki Nishikawa, and Masahiro Tsuji, both of Kanagawa, all of Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1982, Ser. No. 440,475
Claims priority, application Japan, Nov. 13, 1981, 56-181059
Int. Cl.³ C22C 9/02, 9/04
U.S. Cl. 420—471 **2 Claims**

1. A copper alloy suited for the manufacture of radiators consisting essentially of:

25–40 wt %—zinc,

0.005–0.070 wt %—phosphorus,

0.05–1.0 wt %—tin,

0.05–1.0 wt %—aluminum,

balance—copper and concomitant impurities.

4,452,758
COMPOSITIONS AND PROCESS FOR INHIBITING CORROSION OF ALUMINUM

Joe C. Wilson, Woodhaven; Stanley T. Hirozawa, Birmingham, both of Mich.; Stephen E. Eisenstein, Houston, Tex., and Jerrold F. Maxwell, Matteson, Ill., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

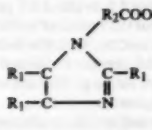
Continuation-in-part of Ser. No. 281,516, Jul. 8, 1981, Pat. No. 4,389,371, which is a continuation of Ser. No. 75,689, Sep. 14, 1979, abandoned. This application May 16, 1983, Ser. No. 495,095
Int. Cl.³ C23F 11/14, 11/16, 11/18
U.S. Cl. 422—15 **4 Claims**

1. A process for inhibiting the corrosion of aluminum in contact with aqueous liquids, excluding alkali metal nitrates and nitrites, said process comprising adding to said liquid an effective corrosion inhibiting amount of

(A) a conventional corrosion inhibitor selected from the group consisting of at least one of the alkali metal carbonates, borax, the alkali metal dichromates, the alkali metal silicates, phosphorus acid, phosphoric acid, an alkali metal tungstate, an alkali metal salt of benzoic or toluic acid, an alkali metal salt of a phenol, benzotriazole, tolyltriazole, and an organo-silicone compound;

(B) about 0.5 percent to about 15 percent by weight each of an alkanolamine and an alkali metal phosphate; and

(C) about 0.03 percent to about 2 percent by weight of a heterocyclic nitrogen compound having the formula:



wherein R_1 is individually selected from hydrogen or a monovalent radical selected from the group consisting of straight or branched chain monovalent alkyl of 1 to 18 carbon atoms, monovalent cycloalkyl or alkoxy radical having up to 18 carbon atoms, a monovalent alkylene radical of 1 to 18 carbon atoms, monovalent aryl radical, a monovalent alkylaryl having 1 to 18 carbon atoms in the alkyl portion thereof, or wherein each R_1 is combined into a single divalent alkyl radical having 2 to 18 carbon atoms; and wherein R_2 is a divalent radical selected from the group consisting of at least one of an alkyl radical or an alkoxy radical each having 2 to 18 carbon atoms and wherein said alkoxy radical is derived from an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, tetrahydrofuran, and mixtures thereof; and wherein M is an alkali metal.

4,452,759
IMMUNOLOGICAL AGGLUTINATION PATTERN DETECTION DEVICE

Hiroshi Takekawa, Kunitachi, Japan, assignor to Olympus Optical Company Limited, Japan

Filed Sep. 5, 1980, Ser. No. 184,319
Claims priority, application Japan, Sep. 10, 1979, 54-123909
Int. Cl.³ G01N 33/54
U.S. Cl. 422—73 **4 Claims**

1. An immunological agglutination pattern detection device that includes

a stationary reaction vessel having a concave interior base surface that includes a centrally located V-shaped section for collecting particles contained in the vessel to create an agglutination pattern that is indicative of the amount of particles contained in the vessel,

a point light source positioned on one side of the base surface for uniformly illminating the base surface to create a light image of the agglutination pattern,

an image forming surface positioned on the opposite side of the base surface for receiving the light image of said agglutination pattern,

a projection lens for focusing a light image of the agglutination pattern upon the image forming surface,

a slit plate mounted adjacent to said image forming surface which has a light aperture formed therein,

means for moving the slit plate in relation to said image forming surface whereby the aperture of the slit scans the image focused upon said surface, and

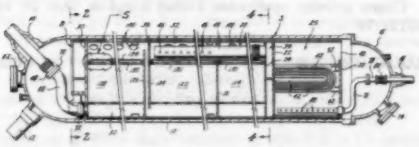
a light detecting means for receiving light passed through said aperture and providing an output signal indicative of the agglutination pattern.

4,452,760

HORIZONTAL AMMONIA CONVERTER

Robert B. Peterson; Ralph Finello, both of Houston, Tex., and George A. Denavit, Aurora, Colo., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Jan. 18, 1982, Ser. No. 340,135
Int. Cl.³ C01C 1/04
U.S. Cl. 422—148 1 Claim



1. A horizontally disposed converter for use in the synthesis of ammonia comprising:

(a) a horizontally disposed cylindrical outer shell having a removable head at one end thereof;

(b) a horizontally disposed basket comprising a horizontally disposed cylindrical inner shell having end walls at each end thereof disposed within the outer shell in horizontally disposed relationship therewith and forming an annular passage therebetween, said annular passage being in flow communication with an inlet; said basket further including first, second and third transversely disposed walls therein in longitudinally spaced relationship with one another; said basket further having a heat exchange section disposed forwardly of said walls adjacent one end thereof and in flow communication through said first wall with said basket, said heat exchange section including a plurality of tubes and a tube sheet and being defined by the inner shell, one of said end walls and said first wall; said basket further having a gas transfer section defined by said inner shell, said first wall and said second wall, said gas transfer section having means to direct gas to a section further having means for directing the product gas from said first catalyst bed to said heat exchange section and further including means for directing the product gas from said heat exchange section into said second catalyst bed; said basket further having a first catalyst bed section defined by said inner wall, said second wall and said third wall, said basket further including a second catalyst bed section defined by said inner wall, said third wall and the opposite end wall, said first and second catalyst bed section containing respectively first and second catalysts beds arranged for downward flow;

(c) a gas inlet and a gas outlet respectively positioned in each end of said outer sheet and said basket;

(d) gas passage means defined by said formed annular passage for flowing gas in succession from gas inlet, through the formed annular passage, the end wall defining the heat exchange section, the heat exchange section externally of the tubes, the first wall, the gas transfer means, the second wall and the first catalyst bed;

(e) means for flowing gas from the heat exchange section inside of the tubes in succession through the first wall, the gas transfer means, the second wall, and the second catalyst bed; and

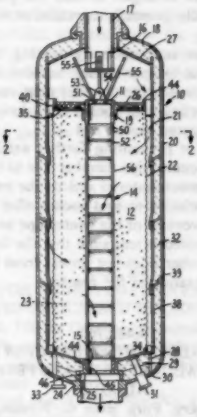
(f) means for flowing gas from the second catalyst bed to the gas outlet.

4,452,761

METHOD AND APPARATUS FOR RESTRAINING LIFTING OF RADIAL REACTOR CENTERPIPES

Robert A. Farnham, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 30, 1982, Ser. No. 403,527
Int. Cl.³ B01J 8/02, 35/02
U.S. Cl. 422—218 15 Claims



1. Method of assembling a hydroprocessing reactor wherein an axially elongated reactor vessel includes an internal structure permitting radial flow between the central portion of said vessel and the axially elongated sidewall of said vessel, said internal structure being formed by a plurality of elements, each of which is insertable or removable through an access opening in the upper wall of said vessel and each of said internal structure elements being supported by gravity on the lower end wall of said vessel, which comprises

positioning a centralized socket member to communicate with a flow passageway through said lower end wall of said vessel,

seating the lower end of a centerpipe member in said socket member to centralize said centerpipe in said vessel and to extend it axially parallel to a substantial portion of the length of said sidewall,

said centerpipe being formed to include over its length a constant diameter external screen member, said external screen member having a surface uniformly permeable for fluid flow therethrough,

enclosing said centerpipe screen member within a body of catalyst particles extending outwardly from said screen member, externally confining said particles adjacent said vessel sidewall with a plurality of elongated screen segments to form an annular vertical passageway between said vessel sidewall and the so formed cylindrical body of said catalyst particles to permit radial flow of reacting fluids through said screen segments and said body to said centerpipe screen member, and

permitting said gravity supported centerpipe member to axially lift from said socket member to a predetermined, limited extent upwardly due to thermal cycling of said catalyst particles and/or said vessel internal elements, and interposing restraint means between the top of said centerpipe member and the upper end of said vessel to prevent further upward lifting of the centerpipe member beyond said predetermined extent such that the lower end of the centerpipe member does not lift sufficiently to unseat the lower end of the centerpipe member from the socket during normal operation of the reactor.

8. A radial flow reactor for flowing fluid to be reacted with a solid contact material comprising:

a vertically elongated vessel having fluid inlet and outlet passageways formed therein;

a vertically elongated centerpipe member, having flow paths formed therethrough, said centerpipe member being vertically movable relative to said vessel;

means for retaining said solid contact material in a generally cylindrical body around said centerpipe member, said means for retaining being a plurality of elongated arcuate screen members arranged around the periphery of said vessel and axially generally coextensive with said centerpipe member;

socket means for independently seating said centerpipe member therein by gravity for vertical insertion or removal of said centerpipe member relative to said vessel;

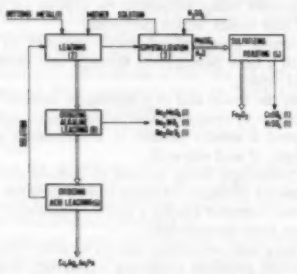
means for supporting said socket on a lower wall of said vertically elongated vessel; and

restraint means for preventing further axial lifting of said gravity seated centerpipe member due to thermal cycling of the solid contact material and/or the internal structure of the vessel relative to said socket after permitting upward axial movement of the centerpipe member to a predetermined, limited extent such that the lower end of the centerpipe member does not unseat from the socket during normal operation of the reactor.

4,452,762
HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF VALUABLE METALS FROM METALLIC ALLOYS

Sigmund P. Fugleberg, Pori; Bror G. Nyman, Vanha-Ulvila; Stig-Erik Hultholm; Aako Parviainen, both of Espoo, and Jussi Rastas, Pori, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Jun. 5, 1981, Ser. No. 271,038
Claims priority, application Finland, Jun. 19, 1980, 801984
Int. Cl.³ C01G *1/00*
U.S. Cl. 423—54 **3 Claims**

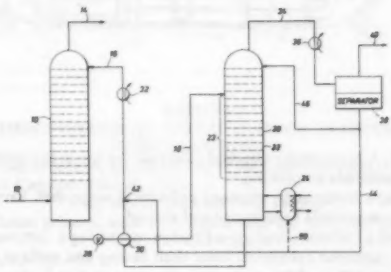


1. A process for the recovery of iron, cobalt, nickel, molybdenum and tungsten from metallic alloys having iron as their principal constituent, comprising leaching such metal alloy in a first leaching stage with a sulfuric acid solution at a temperature of 55° to 75° C., the concentration of the acid being sufficient to produce as high a salt concentration as possible of iron, cobalt and nickel salts in solution; then raising the pH value above 2 at the end of the first leaching stage to precipitate molybdenum and tungsten values as a first leach residue; separating said first leach residue and further leaching the residue in an oxidizing alkaline leaching stage using a NaOH solution; separating molybdenum from the resulting solution by extraction by means of a suitable extractant; heating the salt solution from the first leaching stage to a temperature of 90°–105° C. and adding acid in an amount corresponding to the salt which has passed out of solution as solids, in order to crystallize salts of iron, cobalt and nickel, separating the crystallized salts from the solution, and returning the solution to the first leaching stage; decomposing the crystallized salts under sulfating conditions, and then leaching the cobalt and nickel salts from iron oxide by means of water.

4,452,763
PROCESS FOR REGENERATION OF SOLVENTS IN HYDROGEN SULFIDE REMOVAL FROM GASES

Eduard J. van de Kraats, and Richard C. Darton, both of 3, Badhuisweg, Amsterdam, Netherlands

Continuation of Ser. No. 108,090, Dec. 28, 1979, abandoned.
This application Jan. 22, 1982, Ser. No. 341,717
Claims priority, application United Kingdom, Dec. 28, 1978, 50121/78
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **4 Claims**



1. A process comprising

(a) absorbing H_2S from a gas stream containing said H_2S by contacting the gas stream in an absorption zone with an absorbing solvent containing between 5 and 55 percent by weight of water, producing a treated gas and a fat solvent;

(b) passing the fat solvent to a regenerator, and stripping the H_2S from the fat solvent by contacting the fat solvent with steam, to produce a gas stream containing H_2S and water vapor, and a lean absorbing solvent;

(c) condensing the water vapor to form water and separating the water from the H_2S;

(d) returning a portion of the water from step (c) to the upper section of the regeneration zone;

(e) withdrawing water from said section, and combining the water with the lean absorbing solvent prior to entry of the lean absorbing solvent into the absorption zone;

(f) and passing the lean absorbent and water to the absorption zone.

4,452,764
BISMUTH INHIBITORS FOR ACID GAS CONDITIONING SOLUTIONS

Billy D. Oakes, Lake Jackson; Michael S. Dupart, Alvin, both of Tex., and David C. Cringle, Melbourne, Australia, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 394,209, Jul. 1, 1982, Pat. No. 4,420,337.
This application Jul. 22, 1983, Ser. No. 516,073
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **4 Claims**

1. In the method of separating acid gases such as carbon dioxide from a gaseous feed stream containing said acid gases by contacting said gaseous stream with an aqueous alkanolamine solution followed by regeneration of said solution the improvement which comprises inhibiting the corrosion of stainless steel equipment used therein by maintaining in said solution, a corrosion inhibiting amount of one or more soluble trivalent bismuth compounds.

4,452,765

METHOD FOR REMOVING SULFUR OXIDES FROM A HOT GAS

Morris W. Peterson, and Thomas B. Hurst, both of Medina, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 30, 1980, Ser. No. 173,784
Int. Cl.³ C01B 17/00
U.S. Cl. 423—242 2 Claims

1. An improved method for removing sulfur oxides from a hot gas comprising the steps of:

conveying the hot gas above 190° F. to a first compartment of a spray drying reactor chamber wherein settleable particulate matter is removed;

directing the gas in the first compartment to a register assembly having at least one port communicating with a second compartment and a y-jet dual media nozzle horizontally disposed and discharging through the port;

passing the gas in a swirling motion about said nozzle and through said port and into the second compartment;

supplying an alkali slurry containing from 0.6 to 1.6 pound moles of alkali per pound moles of sulfur oxide in the gas and an atomizing fluid to the nozzle for mixing therein to atomize the slurry;

discharging the atomized slurry into the second compartment for contact with said gas while maintaining the gas at a predetermined temperature to form a dry mixture of sulfite and sulfate compounds and removing at least a portion thereof from said second compartment; and

conveying and discharging the gas from said second compartment to a dry particle collection zone for removing substantially all of the remaining entrained dry mixture.

4,452,766

DOUBLE ALKALI PROCESS FOR REMOVAL OF SULFUR DIOXIDE FROM GAS STREAMS

Daniel E. Pike, Harrington Park, N.J., assignor to AirPol, Inc., Englewood, N.J.

Filed Aug. 30, 1982, Ser. No. 412,941
Int. Cl.³ C01B 17/00
U.S. Cl. 423—242 15 Claims

1. In a double alkali process for removing sulfur oxides from a gas stream containing said sulfur oxides and entrained fine solid particles which contain alkali, which process comprises:

scrubbing said gas stream with a circulating aqueous alkali scrubbing solution containing alkali sulfite and alkali bisulfite to produce a liquid effluent containing relatively more alkali bisulfite and a second gas stream containing carbon dioxide and relatively less sulfur dioxide;

treating at least a portion of said effluent with lime to regenerate an alkali scrubbing solution containing alkali hydroxide;

softening the regenerated alkali scrubbing solution by treating with alkali carbonate to lower the concentration of dissolved calcium therein; and

recycling the softened, regenerated scrubbing solution to the scrubbing step;

the improvement comprising eliminating the need for any external alkali make-up to the process by treating the fine solid particles entrained in said gas stream to remove soluble alkali therefrom and thereby establish said aqueous alkali scrubbing solution and by producing in situ, in controlled amounts, all of the alkali carbonate required for the softening step by reacting at least a portion of the alkali hydroxide in the recycled regenerated scrubbing solution with at least a portion of the carbon dioxide in said second gas stream and supplying the resulting alkali carbonate to said softening step.

4,452,767

METHOD FOR REMOVING OXIDE CONTAMINATION FROM TITANIUM DIBORIDE POWDER

Jorulf Brynestad, and Carlos E. Bamberger, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 26, 1983, Ser. No. 488,802
Int. Cl.³ C01B 35/04
U.S. Cl. 423—297 2 Claims

1. A method for purifying titanium diboride powder contaminated with an oxide selected from the group consisting of TiO_2, Ti_2O_3, Al_2O_3, SiO_2, and B_2O_3, comprising:

contacting the contaminated titanium diboride powder with an excess amount of gaseous BCl_3 to thereby form gaseous $(BOCl)_3$ by reaction of said BCl_3 with said oxide; and

separating the gaseous $(BOCl)_3$ from the titanium diboride powder.

4,452,768

PROCESS FOR REMOVING HEAVY METAL IONS FROM WET-PROCESSED PHOSPHORIC ACID

Reinhard Gradl, Hürth; Günther Schimmel, Erftstadt; Werner Krause, Hürth, and Gero Heymer, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 3, 1983, Ser. No. 455,252
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202658
Int. Cl.³ C01B 25/16; B01D 11/00; C01G 17/00; B03C 1/00
U.S. Cl. 423—321 R 8 Claims

1. A process for removing ions of cadmium, copper, lead and mercury from crude wet-process phosphoric acid containing dissolved, emulsified or suspended organic substances by contacting the crude wet-process phosphoric acid with an adsorbent and an ester of dithiophosphoric acid, simultaneously and separating the purified phosphoric acid from the ester and adsorbent said adsorbent being selected from active carbon, carbon black, a porous resin, or silicate.

4,452,769

METHOD OF PREPARING CRYSTALLINE ZEOLITE

Pochen Chu, West Deptford, and Guenter H. Kuehl, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 140,466, Apr. 17, 1980, abandoned, which is a continuation of Ser. No. 22,260, Mar. 21, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,116
Int. Cl.³ C01B 33/28
U.S. Cl. 423—329 3 Claims

1. A method for preparing a zeolite ZSM-12 type crystalline material which comprises preparing a reaction mixture containing a source of an alkali metal oxide, an oxide of silicon, an oxide of aluminum, methyltriethylammonium ion, and water and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

SiO_2/Al_2O_3=40 or higher to ∞
$M_2O/(MTEA)_2O$=0.2 to 2.0
H_2O/OH^-=50 to 400
OH^-/SiO_2=0.05 to 0.35

wherein M is an alkali or alkaline earth metal and $MTEA^+$ is a methyltriethylammonium ion and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed.

4,452,770
PHOSPHOANHYDRITE PROCESS

Jay W. Palmer, Temple Terrace, Fla., and John C. Gaynor, Des Plaines, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 14, 1981, Ser. No. 330,529
Int. Cl.³ C01F *1/00, 5/00, 11/00;* **C01B** *25/16*
U.S. Cl. 423—167 **11 Claims**

1. A process for producing phosphoric acid and calcium sulfate from phosphate rock which comprises:

continuously feeding finely divided phosphate rock, sulfuric acid, phosphoric acid, water and anhydrite seed to a mixing zone and mixing them to form a slurry;

the quantities charged to the mixing zone being such as to provide a slurry comprising about 20–50 weight % total solids, about 62–73 weight % total phosphoric acid and sulfuric acid content with about 1–4 weight % sulfuric acid, and about 10:1–100:1 by weight of anhydrite seed to phosphate rock, and mixing at a temperature between about 60° and 110° C.;

continuously withdrawing a leach slurry from said mixing zone and passing it to a first filtering separation zone to separate calcium sulfate slurry and phosphoric acid;

recovering a strong phosphoric acid from the first separation zone; and

recovering a slurry of calcium sulfate anhydrite in phosphoric acid from the first separation zone and returning it to the mixing zone.

4,452,771
CARBON PARTICLES

Arlon J. Hunt, Oakland, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,369
Int. Cl.³ C01B *31/02;* **C09C** *1/48*
U.S. Cl. 423—450 **7 Claims**

1. A method for producing carbon particles having a diameter in the range of about 0.01 to about 0.5 micrometers by the pyrolysis of a dilute mixture of a hydrocarbon and an inert carrier gas with minimum agglomeration of the particles, comprising the steps of:

directing the dilute mixture having a ratio of about 1 part hydrocarbon to about 8 parts carrier gas through a nozzle into an upper portion of a heated elongated reaction chamber,

cooling the nozzle to a temperature of about 50° to 150° C. such that the mixture is cool upon entering the heated reaction chamber,

controlling the temperature of the reaction chamber in a range of about 800°–1000° C. so as to result in pyrolysis of at least a portion of the mixture thereby forming carbon particles while substantially minimizing agglomeration thereof, and

directing the thus formed particles out of a lower portion of the reaction chamber.

4,452,772
METHOD OF PRODUCING SULFUR FROM SO_2-CONTAINING GASES

Karl Knoblauch; Ekkehard Richter, both of Essen; Horst Grochowski, Oberhausen, and Jürgen Schwarte, Essen, all of Fed. Rep. of Germany, assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 286,542, Jul. 24, 1981, abandoned, which is a continuation of Ser. No. 124,787, Feb. 25, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,656
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923704
Int. Cl.³ C01B *17/02*
U.S. Cl. 423—569 **5 Claims**

1. A method of producing sulfur from gases containing water vapor and SO_2 by reduction of the SO_2 at elevated temperature, comprising the steps of introducing the water-vapor and SO_2-containing gases into a reaction zone containing solid carbonaceous material; introducing air into the carbonaceous material at a point upstream of the location at which said gases are introduced, the air being introduced in sufficient quantity to cause a zone of the carbonaceous material to reach a temperature of about 850° to 950° C.; removing said gases from said carbonaceous material upstream from said zone; removing sulfur from the removed gases by condensation leaving residual gas mixture containing H_2S and SO_2 in a volume ratio of 2:1; and subjecting the residual gas mixture containing H_2S and SO_2 to a Claus-process treatment to obtain additional sulfur therefrom.

4,452,773
MAGNETIC IRON-DEXTRAN MICROSPHERES

Robert S. Molday, Vancouver, Canada, assignor to Canadian Patents and Development Limited, Canada

Filed Apr. 5, 1982, Ser. No. 365,562
Int. Cl.³ A61K *43/00;* **G01N** *27/00, 33/54;* **D06M** *16/00*
U.S. Cl. 424—1.1 **31 Claims**

29. A method of labeling cells, enzymes, toxins, hormones, lectins, growth factors, nucleic acids or radioisotopes, discrete colloidal sized particles having a core of ferromagnetic iron oxide and coated with a polysaccharide or a derivative thereof having pendant functional groups, the particles being attached to the cells, enzymes, toxins, hormones, lectins, growth factors, nucleic acids or radioisotopes via the functional group.

4,452,774
ISONITRILE RADIONUCLIDE COMPLEXES FOR LABELLING AND IMAGING AGENTS

Alun G. Jones, Newton Centre; Alan Davison, Needham, and Michael J. Abrams, Allston, all of Mass., assignors to President and Fellows of Harvard College and Massachusetts Institute of Technology, both of Cambridge, Mass.

Filed Apr. 30, 1982, Ser. No. 373,511
Int. Cl.³ A61K *43/00, 49/00;* **C07F** *1/08;* **C07C** *121/20*
U.S. Cl. 424—1.1 **36 Claims**

15. An isonitrile complex having the formula:

$$[A((CN)_xR)_yB_zB'_{z'}]^n$$

wherein A is a radionuclide selected from radioactive isotopes of Tc, Ru, Co, Pt, Fe, Os, Ir, W, Re, Cr, Mo, Mn, Ni, Rh, Pd, Ta; $(CN)_xR$ is a monodentate or polydentate isonitrile ligand bonded to the radionuclide through the carbon atom of the CN group; R is an organic radical; B and B′ are independently other ligands selected from the class of solvents, halogen groups, and ligands comprising one or more neutral donor atoms capable of forming coordinant bonds with said radionuclide; x and y are each independently, integers from 1 to 8; z and z′ are each independently 0 or an integer from 1 to 7; with the proviso that $(xy)+z+z'$ is less than or equal to 8; and n indicates the charge of the complex and can be 0 (neutral), or a positive or negative integer.

4,452,775
CHOLESTEROL MATRIX DELIVERY SYSTEM FOR SUSTAINED RELEASE OF MACROMOLECULES

John S. Kent, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 3, 1982, Ser. No. 446,749
Int. Cl.³ A61K *9/26, 31/56, 37/02, 37/26*
U.S. Cl. 424—19 **21 Claims**

1. A diffusional matrix delivery system for administering a macromolecular active agent at a controlled rate for a prolonged period of time to an animal body site capable of making available its intracellular and/or extracellular fluid for transfer into the system, said system comprising 90.0–99.9%, by weight, of a matrix composed of, by weight:

(a) 20–80% cholesterol powder;

(b) 20–80% cholesterol prills having diameters of 100–1200 microns;
(c) 0.1–5.0% biocompatible binding agent; and
(d) 0.1–5.0% biocompatible lubricating agent, in which is dispersed, by weight,
(e) 0.1–10.0% macromolecular active agent,
wherein the matrix contains a plurality of micropores which are substantially permeable to the passage by diffusion of the macromolecular active agent, and said macromolecular active agent has a molecular weight between 10,000 and 400,000 and is at least ery slightly water soluble.

4,452,776

HYDROGEL IMPLANT ARTICLE AND METHOD

Miguel F. Refojo, Lexington, Mass., assignor to Eye Research Institute of Retina Foundation, Boston, Mass.

Continuation-in-part of Ser. No. 67,630, Aug. 20, 1979, abandoned. This application Mar. 12, 1982, Ser. No. 357,735
Int. Cl.³ A61K *31/78*; C08L *31/00*; C08F *120/26*
U.S. Cl. 424—81 **10 Claims**

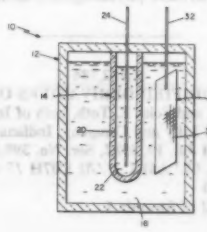
1. A shape-retaining hydrogel surgical implant article characterized by significant softness and pliability in both hydrated and dehydrated states having a Shore Durometer Type A-2 hardness of between about 10 and 65 when dry and up to about 25 when wet with aqueous solution, said surgical implant article comprising an organic-solution polymerized copolymer consisting essentially of about 35% to 70% by weight of alkyl acrylate, about 30% to 65% by weight of 2-hydroxyethyl acrylate and an effective amount up to about 5% by weight of a cross-linking agent.

4,452,777

ELECTROCHEMICAL CELLS

Kuzhikalail M. Abraham, Needham Heights, and Martin W. Rupich, Framingham, both of Mass., assignors to EIC Laboratories, Inc., Norwood, Mass.

Continuation-in-part of Ser. No. 277,709, Jun. 26, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 371,555
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—104 **10 Claims**



1. In an electrochemical cell comprising a housing containing a sodium anode assembly, a cathode assembly, and an electrolyte, the improvement wherein;
said electrolyte comprises a sodium ion conducting alkali metal aluminum tetrahalide, and;
said cathode assembly assembly comprises a transition metal chalcogenide, or a reaction product of said chalcogenide and said electrolyte, disposed on a substrate in contact with said electrolyte, said transition metal being selected from one of groups IV B, V B, VI B, VII B, VIII, IB, and II B in the periodic table,
wherein said anode assembly comprises a tube of sodium ion conducting material filled with sodium metal in an amount such that the level of sodium metal is no less than the level of said transition metal chalcogenide after the first discharge of said cell, said sodium metal being molten in operation, and a wire current collector extending from said sodium metal to the exterior of said housing.

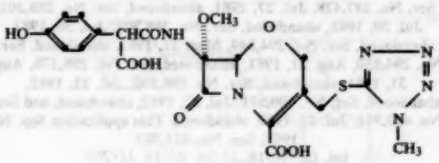
4,452,778

SYNERGISTIC ANTIBACTERIAL COMPOSITIONS AND METHOD OF TREATMENT OF INFECTIONS CAUSED BY MULTIPLE ANTIBIOTIC-RESISTANT ORGANISMS

Gordon L. Brier, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 135,390, Mar. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 36,263, May 4, 1979, abandoned. This application Dec. 21, 1981, Ser. No. 332,774
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 **12 Claims**

1. A method of treating infections caused by multiple-antibiotic-resistant gram-negative organisms in a warm-blooded animal which comprises administering to said animal a 1-oxa antibiotic compound of the formula



or a pharmaceutically acceptable salt thereof in an amount sufficient to produce blood levels of said compound in said animal of at least about 0.02 to about 8 mcg/ml; and administering in coajunction with said 1-oxa antibiotic tobramycin in an amount sufficient to produce blood levels of tobramycin in said animal of between about 0.5 mcg/ml and about 8 mcg/ml.

4,452,779

COMPOSITION AND METHOD OF TREATING LACTATING MAMMALS

Vernon L. Cockerill, 1000 Macomb Rd., Rushville, Ill. 62681

Filed Feb. 3, 1982, Ser. No. 345,315
Int. Cl.³ A61K *33/42*, *33/00*
U.S. Cl. 424—128 **19 Claims**

1. A method of removing an accumulation of fluid from the mammary tissue of a lactating mammal comprising orally administering to said lactating mammal a composition comprising in combination at least one non-toxic diuretic salt in an amount effective for drawing fluid from mammary tissue into the urinary tract of the mammal and at least one non-toxic saline cathartic salt in an amount effective for drawing fluid from the mammary tissue into the intestinal tract of the mammal and emptying the contents of the intestinal tract of the mammal, and said diuretic and cathartic salts providing a source of sodium, potassium and magnesium in a proportion required to maintain a normal electrolyte balance in the fluids of said mammal so that dehydration of the mammal is avoided.

4,452,780

COACERVATED IODINE

Charles S. Ecanow, Skokie, Ill., assignor to NeoMed Corporation, Wilmette, Ill.

Continuation-in-part of Ser. No. 258,050, Apr. 28, 1981, abandoned. This application Feb. 25, 1983, Ser. No. 451,467
Int. Cl.³ A01N *59/12*; A61K *33/22*
U.S. Cl. 424—150 **8 Claims**

1. A method of preparing a composition of matter which possesses antiseptic, bacteriacidal, germicidal fungicidal and viricidal properties and which comprises the following steps:
(a) preparing a two phase liquid aqueous system wherein one phase is a lipoidal, non polar liquid aqueous phase, herein

also referred to as the coacervate phase and the second phase is an equilibrium water phase;

(b) separating the coacervate phase from the equilibrium water phase; and

(c) dissolving an agent effective against pathogenic microorganisms in the coacervate phase; wherein the agent is selected from the group consisting of iodine in either crystalline or liquid form, iodophores and urea.

8. A composition of matter prepared according to the method of claim 1 which is useful as an antiseptic, germicide, bacteriacide, fungicide and viricide.

4,452,781

METHOD OF TREATING BACTERIAL VIRAL OR PARASITIC DISEASES

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Continuation-in-part of Ser. No. 187,584, Sep. 15, 1980, abandoned, Ser. No. 187,585, Sep. 15, 1980, abandoned, Ser. No. 196,882, Oct. 14, 1980, abandoned, Ser. No. 233,036, Feb. 9, 1981, abandoned, Ser. No. 233,037, Feb. 9, 1981, abandoned, Ser. No. 287,428, Jul. 27, 1981, abandoned, Ser. No. 288,302, Jul. 30, 1981, abandoned, Ser. No. 288,304, Jul. 30, 1981, abandoned, Ser. No. 294,849, Mar. 21, 1981, abandoned, Ser. No. 294,850, Aug. 21, 1981, abandoned, Ser. No. 298,178, Aug. 31, 1981, abandoned, Ser. No. 400,590, Jul. 22, 1982, abandoned, Ser. No. 400,591, Jul. 22, 1982, abandoned, and Ser. No. 400,592, Jul. 22, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 431,783

Int. Cl.³ A61K *33/04, 31/19, 31/205*

U.S. Cl. 424—164 **3 Claims**

1. A method for treating a human or animal host infected with bacteria and viruses or infested with parasites which comprises: administering to said host a pharmaceutical composition comprising, aminomercaptobutyric acid or its sodium salt and dipotassium hydrosulfate in amount effective to give a reducing action in vivo after injection, liberating charged hydrogen and charged aminithiobutyric radical for neutralizing bacteria and viruses and killing parasites.

2. The method of claim 1, where the pharmaceutical composition comprises 100 to 200 mg of dry aminomercaptobutyric acid or its sodium salt and 300 to 800 mg of dry dipotassium hydrosulfate dissolved in 1 to 10 ccm distilled water, which is injected intravenously or intramuscularly in the host in need of such treatment per 24 hour period.

4,452,782

PENTADECAPEPTIDE

Kenji Takemoto, Fujisawa; Yumiko Miyasaka, Yokohama; Hideo Ishitsuka, Yokohama; Yasuji Suhara, Yokohama, and Hiromi Maruyama, Yokohama, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 255,578, Apr. 20, 1981, abandoned, which is a continuation-in-part of Ser. No. 132,370, Mar. 21, 1980, abandoned. This application Aug. 26, 1982, Ser. No. 411,742

Claims priority, application United Kingdom, Apr. 2, 1979, 7911395

Int. Cl.³ A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **3 Claims**

1. A method of treating an immunologically supressed or deficient individual which comprises treating said individual with an immunopotentiating amount of a pharmaceutical composition consisting of a penta-decapeptide and salts thereof containing the following amino acids: arginine (1 mole), glutamic acid* (1 mole), lanthionine (1 mole), β-methyllanthionine (2 moles), D-phenylalanine (3 moles), glycine (2 moles), proline (1 mole), valine (1 mole), aspartic acid* (1 mole), β-hydroxyaspartic acid* (1 mole), and lysinoalanine (1 mole), the asterisks indicating that either two of these amino acids or one of them and the carboxy terminal amino acid are present as amides, the hydrochloride salt thereof being characterized by the following parameters:

(a) Melting point: 257°–259° C. (dec.);

(b) Specific rotation: $[\alpha]_D^{25} = -72°$ (C=1.0, 0.1N HCl);

(c) Ultraviolet absorption spectrum; Maxima at 251.5 nm-($E_{1\ cm}^{1\%}$=2.68), 257 nm($E_{1\ cm}^{1\%}$=2.90) and 263 nm-.) and a shoulder at 266 nm in water;

(d) Infrared absorption spectrum as shown in FIG. 2.

(e) Solubility in solvents: Soluble in water or methanol; hardly soluble in ethyl acetate; and insoluble in hexane;

(f) Color reaction: Positive to Sakaguchi and Reidon-Smith reactions, and negative to Pauly reaction;

(g) Thin layer chromatography on silica gel F_{254} (Merck) in benzene/ethanol/25% aqueous ammonia (2:4:1, v/v/v): RF=0.4 in admixture with a pharmaceutical diluent or carrier.

4,452,783

DERIVATIVES OF SUBSTITUTED PHENYLACETIC ACIDS AND COMPOSITIONS CONTAINING THEM

Robert E. Marks, 2 Burwood Close, Merrow, Guildford, Surrey; James S. Burton, The Barn Cottage, Bunch La., Haslemere, Surrey; John A. Elvidge, Kylemore, Derby Rd., Haslemere, Surrey, and Saresh Shah, 2 Chestnut Grove, Tottenham, London N17, all of England

Filed Apr. 21, 1982, Ser. No. 370,657

Int. Cl.³ A61K *37/02;* **C07C** *101/72;* **A61K** *31/40*

U.S. Cl. 424—177 **11 Claims**

1. A pharmaceutical composition comprising an anti-inflammatory-effective amount of one or more aminoacid derivatives of the formula

A—NH—R_3—COOH

in which

A is 4-allyloxy-3-chlorophenylacetyl, or 4-n-propoxy-3-chloro-phenylacetyl;

R_3 is selected from the group consisting of residues of glycine, alanine, valine, leucine, isoleucine, serine, homoserine, threonine, proline, hydroxyproline, cysteine, homocysteine, methionine, phenylalanine, tyrosine, dopa, tryptophan, ornithine, lysine, hydroxylysine, histidine, aspartic acid, asparagine, glutamic acid, and glutamine;

or a physiologically acceptable salt or lower alkyl ester thereof, and an inert, physiologically acceptable carrier or excipient.

4,452,784

C-23-MODIFIED DERIVATIVES OF DMT

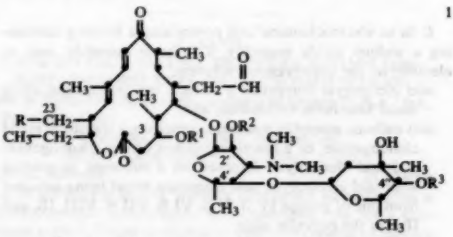
Herbert A. Kirst, and John E. Toth, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 19, 1982, Ser. No. 399,656

Int. Cl.³ A61K *31/70;* **C07H** *17/08*

U.S. Cl. 424—180 **35 Claims**

1. A compound of formula 1



1

wherein

R is iodo, bromo, chloro, fluoro, —S—R^4, azido, —NHR^5, pyridinium or —OSO_2CF_3;

R^1 is hydrogen, C_1–C_5-alkanoyl or C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl,

phenylpropionyl, phenoxyacetyl or phenylthioacetyl; or benzoyl, phenylacetyl, phenylpropionyl, phenoxyacetyl or phenylthioacetyl having from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups;

R^2 is hydrogen, C_1–C_5-alkanoyl or C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl or phenylpropionyl; or benzoyl, phenylacetyl, or phenylpropionyl having from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups;

R^3 is hydrogen, C_1–C_5-alkanoyl or C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl or phenoxyacetyl; or benzoyl, phenylacetyl or phenoxyacetyl having from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups;

R^4 is hydrogen, C_1–C_6 alkyl, cyclohexyl, C_1–C_5-alkanoyl, phenyl or benzyl; phenyl or benzyl having from one to five halo or methyl groups or from one to two methoxyl, nitro or hydroxyl groups; a heteroaryl group selected from imidazolyl, pyrazolyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, triazinyl, triazolyl, tetrazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, thiadoiazolyl, thienyl and furanyl; or a specified heteroaryl group having a C_1–C_4-alkyl, methoxy, ethoxy, hydroxy, keto, phenyl, halophenyl, methylphenyl, or methoxyphenyl substituent; and

R^5 is hydrogen or an acyl group selected from C_1–C_5-alkanoly or C_1–C_5-alkanoyl having from one to three halo substituents; benzoyl, phenylacetyl or phenylpropionyl; or benzoyl, phenylacetyl or phenylpropionyl having from one to five halo or methyl group or from one to two methoxyl, nitro or hydroxyl groups;

and the acid addition salts thereof.

35. A composition useful for the treatment of gram-positive, Pasteurella or Mycoplasma infections comprising an effective amount of a compound of claim **1** or a pharmaceutically acceptable acid addition salt thereof and a suitable pharmaceutical vehicle.

4,452,785

METHOD FOR THE THERAPEUTIC OCCLUSION OF BLOOD VESSELS

William G. Malette, 667 Parkwood La., Omaha, Nebr. 68132, and Herbert J. Quigley, Jr., 9511 Mockingbird Dr., Omaha, Nebr. 68127

Continuation-in-part of Ser. No. 440,039, Nov. 8, 1982, which is a continuation-in-part of Ser. No. 251,321, Apr. 6, 1981, Pat. No. 4,394,373. This application Aug. 12, 1983, Ser. No. 522,492

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **5 Claims**

1. The method of occluding a blood vessel therapeutically by the intravascular injection of an effective amount of chitosan into the vessel.

4,452,786

CONDURANGO GLYCOSIDE COMPOUNDS, PROCESSES FOR THEIR PREPARATION, ANTITUMOR AGENTS COMPRISING THEM AND COMPOSITIONS

Hiroshi Mitsuhashi, Hokkaido; Den-ichi Mizuno, Kanagawa; Koji Hayashi, Hokkaido; Shigeru Abe, Kanagawa; Muneaki Takase, and Toshiharu Narita, both of Tokyo, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00045, 371 Date Nov. 2, 1981, 102(e) Date Nov. 2, 1981, PCT Pub. No. WO81/02577, PCT Pub. Date Sep. 17, 1981

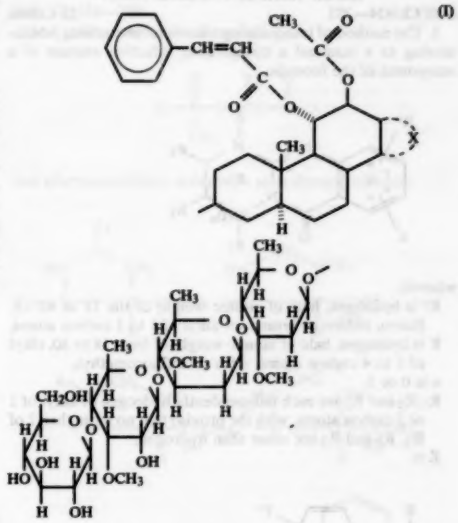
PCT Filed Mar. 5, 1981, Ser. No. 320,974

Claims priority, application Japan, Mar. 5, 1980, 55-27697; May 31, 1980, 55-73594; Jul. 9, 1980, 55-93544; Sep. 9, 1980, 55-125175

Int. Cl.³ A61K *31/71, 31/705;* **C07H** *15/24;* **C07J** *17/00*

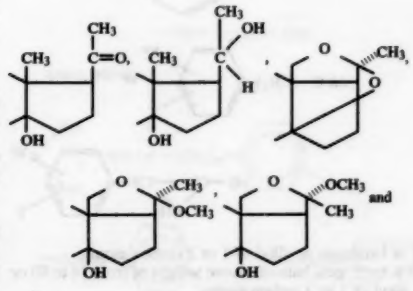
U.S. Cl. 424—182 **8 Claims**

1. Condurango glycoside compounds represented by the general formula (I):



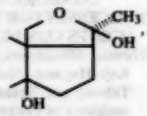
(I)

(where X together with the 13 and 14 position carbon atoms is a group selected from the group consisting of



and

-continued



8. A pharmaceutical composition effective against Ehrlich carcinoma tumor comprising a compound as described in claim 1 in an amount effective against Ehrlich carcinoma in admixture with a pharmaceutically acceptable diluent or carrier.

4,452,787

1-SUBSTITUTED TRICYCLIC QUINAZOLINONES HAVING BIOLOGICAL ACTIVITY AS TRANQUILIZERS

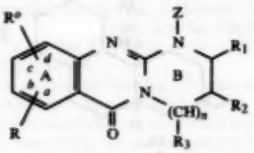
Goetz E. Hardtmann, Morristown, and William J. Houlihan, Mt. Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 302,483, Sep. 16, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,197

Int. Cl.³ A61K *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **22 Claims**

1. The method of tranquilizing a mammal comprising administering to a mammal a tranquilizing effective amount of a compound of the formula:



wherein

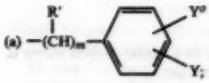
R^o is hydrogen, halo of atomic weight of the 18 to 80, i.e. fluoro, chloro or bromo, or alkyl of 1 to 3 carbon atoms,

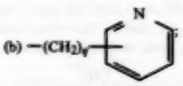
R is hydrogen, halo of atomic weight of from 18 to 80, alkyl of 1 to 4 carbon atoms, nitro or trifluoromethyl,

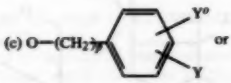
n is 0 or 1,

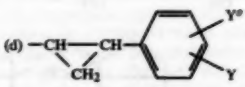
R_1,R_2 and R_3 are each independently hydrogen or alkyl of 1 or 2 carbon atoms, with the proviso that no more than 2 of R_1, R_2 and R_3 are other than hydrogen,

Z is









R′ is hydrogen or alkyl of 1 or 2 carbon atoms,

Y^o is hydrogen, halo of atomic weight of from 18 to 80 or alkyl of 1 to 3 carbon atoms,

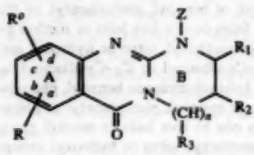
Y is hydrogen, halo of atomic weight of from 18 to 80, alkyl of 1 to 4 carbon atoms, trifluoromethyl or nitro,

p is 1 or 2,

q is 0, 1 or 2, and

m is 0, 1, 2, 3 or 4.

11. A compound of the formula



wherein

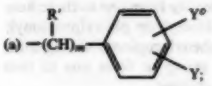
R^o is hydrogen, halo of atomic weight of from 18 to 80, i.e. fluoro, chloro or bromo, or alkyl of 1 to 3 carbon atoms,

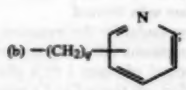
R is hydrogen, halo of atomic weight of from 18 to 80, alkyl of 1 to 4 carbon atoms, nitro or trifluoromethyl,

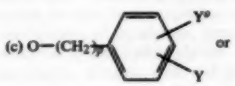
n is 0 or 1,

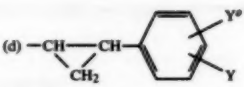
R_1,R_2 and R_3 are each independently hydrogen or alkyl of 1 or 2 carbon atoms, with the proviso that no more than 2 of R_1, R_2 and R_3 are other than hydrogen,

Z is









R′ is hydrogen or alkyl of 1 or 2 carbon atoms,

Y^o is hydrogen, halo of atomic weight of from 18 to 80 or alkyl of 1 to 3 carbon atoms,

Y is hydrogen, halo of atomic weight of from 18 to 80, alkyl of 1 to 4 carbon atoms, trifluoromethyl or nitro,

p is 1 or 2,

q is 0, 1 or 2, and

m is 0, 1, 2, 3 or 4,

with the proviso that R is other than hydrogen when n is 0 and Z is of type (a).

22. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and a tranquilizing effective amount of a compound of claim 11.

4,452,788

SUBSTITUTED 8-PHENYLXANTHINES

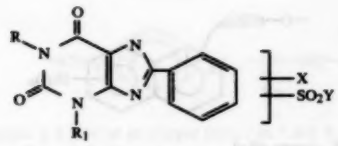
James A. Bristol, Ann Arbor, and Edward W. Badger, Dexter, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 21, 1982, Ser. No. 370,649

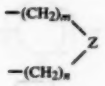
Int. Cl.³ C07D *239/96;* **A61K** *31/52*

U.S. Cl. 424—253 **14 Claims**

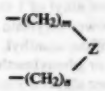
1. A compound having the structural formula



wherein R and R_1 may be the same or different and are hydrogen, alkyl of from one to six carbon atoms, hydroxyalkyl of from two to six carbon atoms, $(CH_2)_{2-4}N(R_3)_2$ wherein R_3 is alkyl of from one to six carbon atoms, $Ph(CH_2)_{1-3}$ or $CF_3(CH_2)_{1-4}$; the dashed lines mean that the two substituents may only be in the three or four positions; X is hydrogen, halogen, hydroxy, alkyl of from one to six carbon atoms, or NR_4R_5 wherein R_4 and R_5 are hydrogen or alkyl of from one to six carbon atoms, Y is NR_6R_7 wherein R_6 is hydrogen, hydroxyalkyl of from two to six carbon atoms or alkyl of from one to six carbon atoms, R_7 is hydrogen, alkyl of from one to six carbon atoms, or $(CH_2)_{2-6}$-NR_8R_9 wherein R_8 and R_9 are hydrogen, alkyl of from one to six carbon atoms or when taken together form



wherein m and n may be the same or different and are 1, 2, or 3 provided that the sum of m and n is an integer of from three to six and Z is a direct bond, O, S—$(O)_k$ wherein k is 0, 1, or 2 or N-R_{10} wherein R_{10} is hydrogen or alkyl of from one to six carbon atoms; or R_6 and R_7 when taken together form



wherein m, n, and z are defined above; and the pharmaceutically acceptable salts thereof.

4,452,789

1-FURYL-3,4-DIHYDRO-ISOQUINOLINES

Walter Lösel, Gau-Algesheim; Otto Roos, Schwabenheim; Richard Reichl, and Franz-Josef Kuhn, both of Gau-Algesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

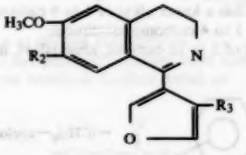
Filed Oct. 25, 1982, Ser. No. 436,588

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3143876

Int. Cl.[3] **A61K** *31/47, 31/535;* **C07D** *405/04, 413/14*

U.S. Cl. 424—258 **5 Claims**

1. A compound of the formula



wherein

R_2 is methoxy or hydroxyl;

R_3 is cyano or —CO—Y;

Y is hydroxyl, alkoxy of 1 to 3 carbon atoms, morpholino, dimethylamino, diethylamino, (alkyl of 1 to 5 carbon atoms)-amino, (-hydroxyl-propyl)-amino, propargyl-amino or —NH—$CH_2)_n$R;

n is 1, 2 or 3; and

R is dimethylamino, methoxy, chlorine, morpholino, o-methoxy-phenyl, dimethoxyphenyl or 2-furyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of treating circulatory and coronary disorder in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective circulation enhancing amount of a compound of claim 1.

4,452,790

PHOSPHONYL HYDROXYACYL AMINO ACID DERIVATIVES AS ANTIHYPERTENSIVES

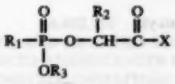
Donald S. Karanewsky, Princeton Junction, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 23, 1982, Ser. No. 391,884

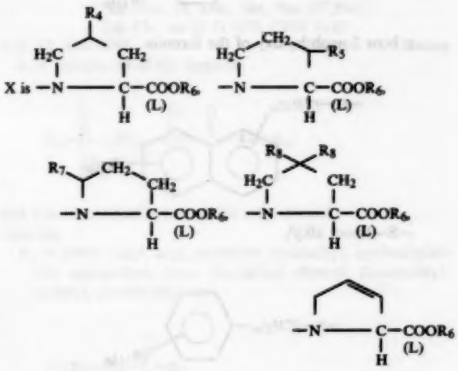
Int. Cl.[3] **A61K** *31/675;* **C07F** *9/65*

U.S. Cl. 424—200 **21 Claims**

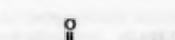
1. A compound of the formula



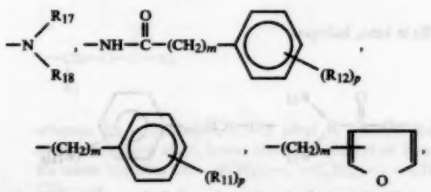
and pharmaceutically acceptable salts thereof wherein:



R_4 is hydrogen, lower alkyl, halogen, keto, hydroxy,



azido, amino,



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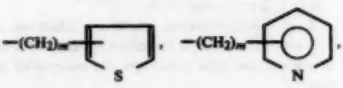
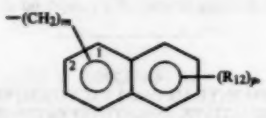
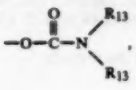


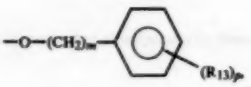
a 1- or 2-naphthyl of the formula



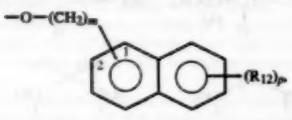
$-(CH_2)_m$—cycloalkyl,



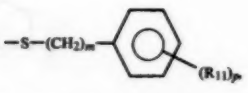
—O—lower alkyl,



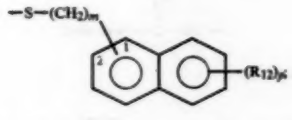
a 1- or 2-naphthyloxy of the formula



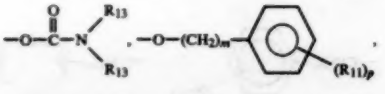
—S—lower alkyl,



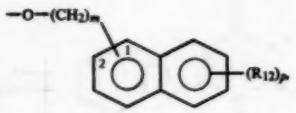
or a 1- or 2-naphthylthio of the formula



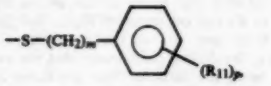
R_5 is keto, halogen,



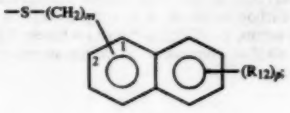
—O—lower alkyl, a 1- or 2-naphthyloxy of the formula



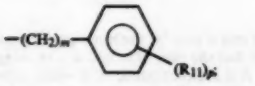
—S—lower alkyl,



or a 1- or 2-naphthylthio of the formula



R_7 is keto or



each R_8 is the same or different and is halogen or —Y—R_{14};

R_{11} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{12} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

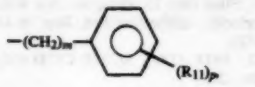
m is zero, one, two or three;

p is one, two or three provided that p is more than one only if R_{11} or R_{12} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{13} is hydrogen or lower alkyl of 1 to 4 carbons;

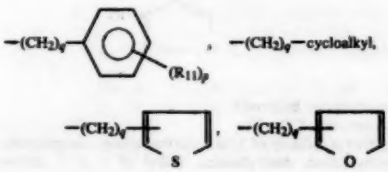
Y is oxygen or sulfur;

R_{14} is lower alkyl of 1 to 4 carbons,



or the R_{14} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;

R_1 is alkyl of 1 to 10 carbons, aminoalkyl, haloalkyl,



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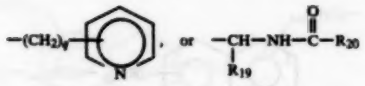
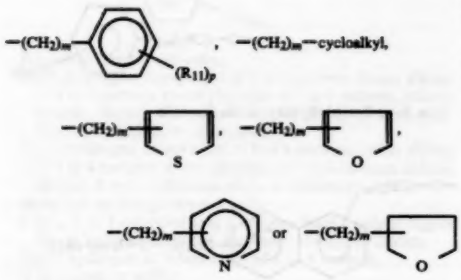


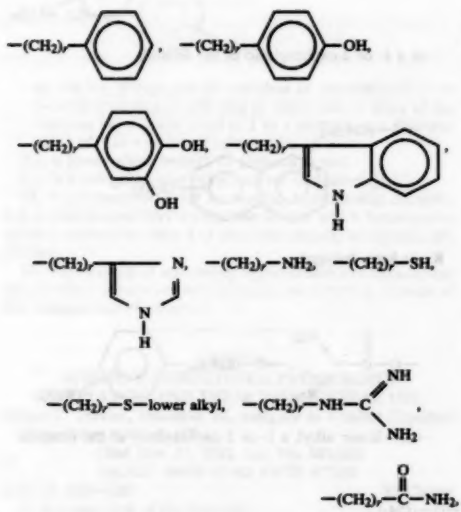
wherein q is zero or an integer from 1 to 7 and R_{11} and p are as defined above; and

R_{19} and R_{20} are independently selected from the group consisting of hydrogen, lower alkyl, halo substituted lower alkyl,



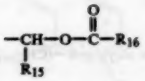
wherein m, R_{11} and p are as defined above;

R_2 is hydrogen, lower alkyl, halo substituted lower alkyl,



wherein r is as defined hereinbefore;

R_3 and R_6 are independently selected from hydrogen, lower alkyl, benzyl, benzhydryl, alkali metal, or



wherein R_{15} is hydrogen, lower alkyl, cycloalkyl, or phenyl, and R_{16} is hydrogen, lower alkyl, lower alkoxy, phenyl, or R_{15} and R_{16} taken together are $-(CH_2)_2-$, $-(CH_2)_3-$, $-CH=CH-$ or

R_{17} is lower alkyl, benzyl, or phenethyl; and

R_{18} is hydrogen, lower alkyl, benzyl, or phenethyl.

20. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensive compound or pharmaceutically acceptable salt thereof defined in claim **1**.

21. The method of alleviating hypertension in a mammalian specie which comprises administering an effective amount of the composition of claim **20**.

4,452,791

AMINOALKYL AND RELATED SUBSTITUTED PHOSPHINIC ACID ANGIOTENSIN CONVERTING ENZYME INHIBITORS

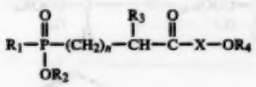
Denis E. Ryono, Princeton, and Edward W. Petrillo, Jr., Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 15, 1982, Ser. No. 357,941

Int. Cl.[3] **A61K** *31/675;* **C07F** *9/65*

U.S. Cl. 424—200 **17 Claims**

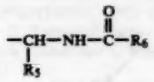
1. A compound of the formula



and pharmaceutically acceptable salts thereof,

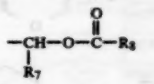
wherein

R_1 is lower alkyl, aryl, arylalkyl, cycloalkyl, cycloalkylalkyl, aminoalkyl, furyl, furylalkyl, thienyl, thienylalkyl, pyridyl, pyridylalkyl or



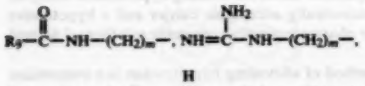
and R_5 and R_6 are independently selected from hydrogen, lower alkyl, haloalkyl, aryl, alkylaryl, cycloalkyl, cycloalkylalkyl furyl, furylalkyl, thienyl, thienylalkyl, pyridyl or pyridylalkyl;

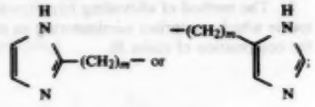
R_2 and R_4 each is independently hydrogen, lower alkyl, arylalkyl, benzhydryl or



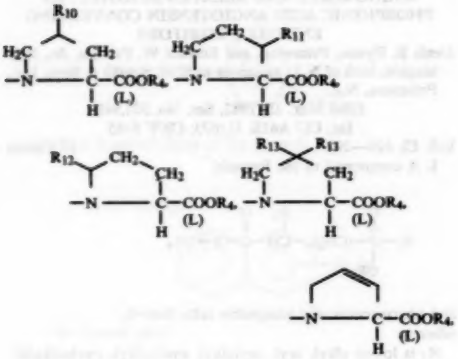
wherein R_7 is hydrogen, lower alkyl or phenyl, R_8 is hydrogen, lower alkyl, lower alkoxy or phenyl or R_7 and R_8 taken together are $-(CH_2)_2-$, $-(CH_2)_3-$, $-CH=CH-$, or

n is 0 or 1;
R_3 is $NH_2(CH_2)_m$—,

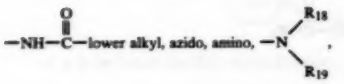


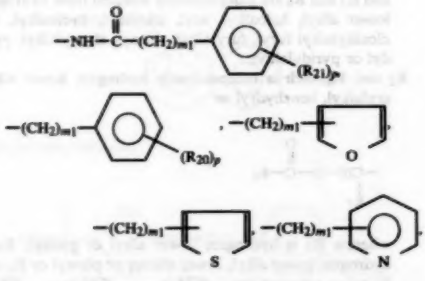


R_9 is hydrogen, lower alkyl, aryl or arylalkyl, and m is 0 or an integer of from 1 to 5, and —XOR_4 is an imino or amino acid derivative of the formula

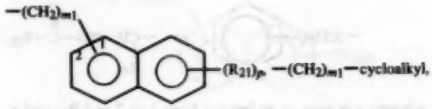


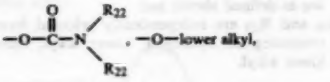
R_{10} is hydrogen, lower alkyl, halogen, keto, hydroxy,

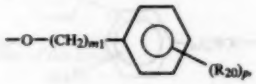




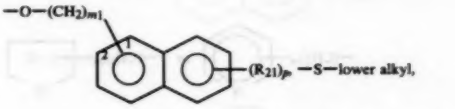
a 1- or 2-naphthyl of the formula

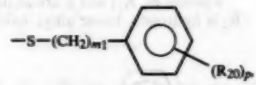




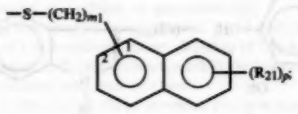


a 1- or 2-naphthyloxy of the formula

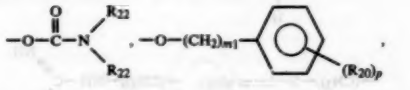




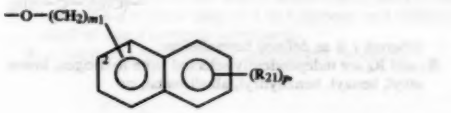
or a 1- or 2-naphthylthio of the formula

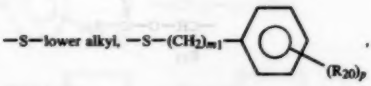


R_{11} is keto, halogen,

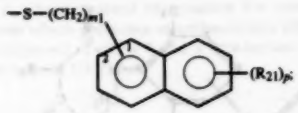


—O—lower alkyl, a 1- or 2-naphthyloxy of the formula

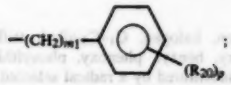




or a 1- or 2-naphthylthio of the formula



R_{12} is keto or



R_{13} is halogen or —Y—R_{23};

R_{20} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, hydroxy, phenyl, phenoxy, phenylthio, or phenylmethyl;

R_{21} is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl, or hydroxy;

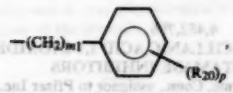
m_1 is 0 or an integer from 1 to 5;

p is 1, 2 or 3 provided that p is more than 1 only if R_{20} or R_{21} is hydrogen, methyl, methoxy, chloro, or fluoro;

R_{22} is hydrogen or lower alkyl of 1 to 4 carbons;

Y is oxygen or sulfur;

R_{23} is lower alkyl of 1 to 4 carbons,



or the R_{23} groups join to complete an unsubstituted 5- or 6-membered ring or said ring in which one or more of the carbons has a lower alkyl of 1 to 4 carbons or a di(lower alkyl of 1 to 4 carbons) substituent;

R_{18} is lower alkyl, benzyl, or phenethyl; and

R_{19} is hydrogen, lower alkyl, benzyl or phenethyl.

14. A composition useful for treating hypertension comprising a pharmaceutically acceptable carrier and a hypotensive agent as defined in claim **1** or pharmaceutically acceptable salt thereof.

15. The method of alleviating hypertension in a mammalian specie which comprises administering an effective amount of the composition of claim **14**.

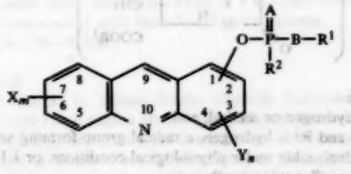
4,452,792

ACRIDINE SUBSTITUTED PHOSPHORUS COMPOUNDS AND THEIR INSECTICIDAL USE

James T. Traxler, Evanston, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

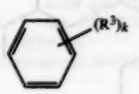
Filed Dec. 27, 1982, Ser. No. 453,643
Int. Cl.³ A01N *43/42*; C07D *487/00*
U.S. Cl. 424—200 **10 Claims**

1. A compound of the formula

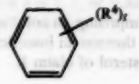


(I)

wherein X and Y are each independently selected from the group consisting of halogen, alkyl of up to six carbon atoms, haloalkyl of up to six carbon atoms, nitro, alkylsulfinyl of up to six carbon atoms, alkylsulfonyl of up to six carbon atoms and cyano; m and n are integers from 0 to 1; R^1 is selected from the group consisting of alkyl of up to six carbon atoms and



wherein R^3 is selected from the group consisting of halogen, alkyl of up to six carbon atoms, haloalkyl of up to six carbon atoms, nitro and cyano; and k is an integer from 0 to 3; R^2 is selected from the group consisting of alkyl of up to six carbon atoms, alkoxy of up to six carbon atoms, alkylthio of up to six carbon atoms, and



wherein R^4 is selected from the group consisting of halogen, alkyl of up to six carbon atoms, haloalkyl of up to six carbon atoms, nitro and cyano; and t is an integer from 0 to 3; and A and B are each independently selected from the group consisting of oxygen and sulfur.

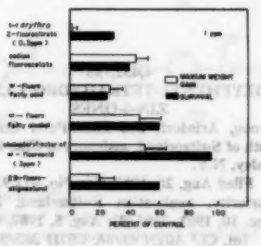
10. A method of insecticidally controlling insects which comprises contacting said insects or the locus of said insects with an insecticidal composition comprising an inert carrier and, in a quantity toxic to insects, an effective amount of a compound of claim **1**.

4,452,793

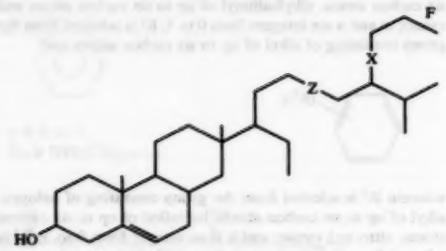
29-FLUOROPHYTOSTEROL TERMITICIDES, COMPOSITIONS AND METHODS OF USE THEREFOR

Glenn D. Prestwich, Stony Brook, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,819
Int. Cl.³ C07J *9/00*
U.S. Cl. 424—238 **25 Claims**



1. A 29-fluorophytosterol of the formula:



wherein —Z— or —X— may each be single or a cis, or a trans double bond provided only one thereof may be a double bond further provided that where X is a single bond it may be in the R,S or RS sterochemical conformation.

10. An insecticidal composition comprising an solid carrier ingestible by insects having absorbed thereon an insecticidally effective amount of a 29-fluorophytosterol of claim 1.

4,452,794

MEDICINE HAVING TRANSPLANT REJECTION AND/OR IMMUNOLOGICAL INFLAMMATION INHIBITING ACTIVITIES, AS WELL AS A METHOD FOR INHIBITING TRANSPLANT REJECTION AND/OR IMMUNOLOGICAL INFLAMMATION

Willy J. Kort, Essenbergen; Ivan L. Bonta, Rotterdam; Martinus J. P. Adolfs, Capelle aid Yssel, and Dirk L. Westbroek, The Hague, all of Netherlands, assignors to Erasmus Universiteit Rotterdam, Rotterdam, Netherlands

Filed Dec. 9, 1982, Ser. No. 448,332

Claims priority, application Netherlands, Dec. 15, 1981, 8105635

Int. Cl.³ A01N *45/00*

U.S. Cl. 424—240 13 Claims

1. Pharmaceutical composition having transplant rejection and/or immunological inflammation inhibiting activities, characterized in that the pharmaceutical composition includes a mixture of a natural or synthetic prostaglandin or prostaglandin derivative and a natural or synthetic substance having immunosuppressive activities as active component, as well as pharmacologically acceptable carriers and/or vehicles.

7. Pharmaceutical composition according to any one of claims 1–4, characterized in that it contains a mixture of (15S)-15-methyl-PGE_1 and prednisolone.

4,452,795

5-PHENOXYPHENYL-TETRAHYDRO-1,3,5-THIADIAZIN-4-ONES

Saleem Farooq, Arisdorf, and Hans-Peter Streibert, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

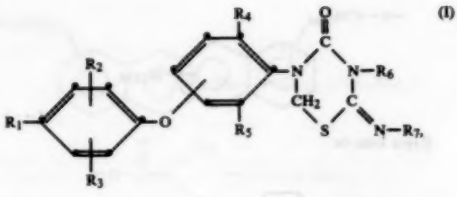
Filed Aug. 26, 1982, Ser. No. 411,930

Claims priority, application Switzerland, Sep. 3, 1981, 5687/81; Dec. 10, 1981, 7895/81; Aug. 5, 1982, 4716/82

Int. Cl.³ A01N *43/88;* C07D *285/34*

U.S. Cl. 424—246 15 Claims

1. A compound of the formula I



(I)

wherein R_1 is hydrogen, halogen, C_1–C_4-alkyl, trifluoromethyl, methoxy, ethoxy, benzyl, phenoxy, phenylthio, or phenoxy or phenylthio substituted by a radical selected from the group consisting of halogen, C_1–C_4-alkyl, methoxy and ethoxy; each of R_2 and R_3 independently of the other is hydrogen, halogen, C_1–C_4-alkyl, trifluoromethyl, methoxy or ethoxy, each of R_4 and R_5 independently of the other is hydrogen or C_1–C_6-alkyl; and each of R_6 and R_7 independently of the other is C_1–C_4-alkyl, trifluoromethyl, C_3–C_6-cycloalkyl, alkoxyalkyl containing a total of 2 to 6 carbon atoms, benzyl, phenyl or phenyl which is substituted by a member selected from the group consisting of halogen, C_1–C_4-alkyl, methoxy and ethoxy, or a salt thereof.

13. A method of controlling plant destructive insects and representatives of the order Acarina, which comprises applying to said insects or to the locus thereof a pesticidally effective amount of a compound as claimed in any one of claims 1 to 11.

4,452,796

6-AMINOALKYLPENICILLANIC ACID 1,1-DIOXIDES AS BETA-LACTAMASE INHIBITORS

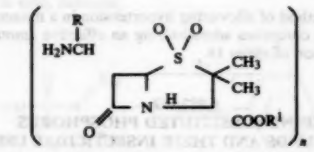
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 388,324, Jun. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 338,797, Jan. 11, 1982, abandoned. This application Oct. 21, 1982, Ser. No. 434,371

Int. Cl.³ A61K *31/545, 31/43;* C07D *499/00, 499/46*

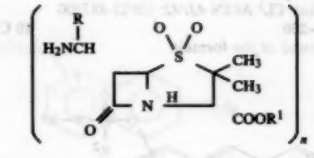
U.S. Cl. 424—246 55 Claims

1. A compound having the stereochemical formula



(I)

or



(II)

wherein

R is hydrogen or methyl; and

n is 1 and R^1 is hydrogen, a radical group forming an ester hydrolyzable under physiological conditions, or 1,1-dioxopenicillanoyloxymethyl; or

n is 2 and R^1 is $—CH_2—$;

a pharmaceutically-acceptable acid addition salt thereof or a

pharmaceutically-acceptable cationic salt thereof when R^1 is hydrogen.

21. A pharmaceutical composition for treating bacterial infections which comprises an antibacterially effective amount of a compound of claim 1 and a beta-lactam antibiotic in a weight ratio of 1:3 to 3:1.

4,452,797
3-AMINOSYDNONIMINES COMPOUNDS AND THEIR USE

Karl Schönafinger; Rudi Beyerle; Rolf-Eberhard Nitz, all of Frankfurt am Main; Piero A. Martorana, Bad Homburg, all of Fed. Rep. of Germany, and Volker Fiedler, Detroit, Mich., assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

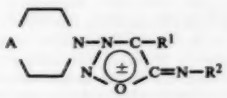
Division of Ser. No. 166,951, Jul. 8, 1980, Pat. No. 4,305,939. This application Feb. 10, 1981, Ser. No. 233,055

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930736

Int. Cl.³ C07D *403/04, 413/04;* A61K *31/38, 31/41*

U.S. Cl. 424—250 **27 Claims**

1. A compound which, in its free-base form, is a pharmacologically-active and physiologically-acceptable 3-amino-sydnonimine of the formula



wherein

R^1 is —H or halo;

R^2 is —H, —NO, —COR^3 or SO_2R^4;

R^3 is —H; optionally-substituted aliphatic hydrocarbyl having from 1 to 6 carbon atoms and any substituent of which is alkoxy with from 1 to 6 carbon atoms or carbocyclic aryloxy with from 6 to 12 carbon atoms; cycloaliphatic hydrocarbyl having from 5 to 8 ring carbon atoms; optionally-substituted carbocyclic aryl with from 6 to 12 ring carbon atoms and 0, 1, 2 or 3 substituents, any of which is, independently, halo, alkyl with from 1 to 4 carbon atoms or alkoxy with from 1 to 4 carbon atoms; araliphatic hydrocarbyl with from 7 to 13 carbon atoms; alkoxy with from 1 to 6 carbon atoms; carbocyclic aryloxy with from 6 to 12 ring carbon atoms; heteroaryl with 5 or 6 ring members, at least 2 of which are carbon atoms, at most one of which is a sulfur atom, at most one of which is an oxygen atom and at most three of which are nitrogen atoms, and wherein any ring member is a carbon atom, a sulfur atom, an oxygen atom or a nitrogen atom; or alkoxycarbonyl with from 2 to 7 carbon atoms;

A is $>N—SO_2R^5$;

and

each of

R^4 and R^5 is, independently, aliphatic hydrocarbyl with from 1 to 6 carbon atoms; optionally-substituted carbocyclic aryl with from 6 to 12 ring carbon atoms, any substituent of which is methyl or chloro; or dialkylamino, each alkyl of which has, independently, from 1 to 4 carbon atoms.

4,452,798
1-SUBSTITUTED PHENYL-4-ALKYL HYDANTOIN PIPERAZINE COMPOUNDS AS ANTIHYPERTENSIVE AGENTS

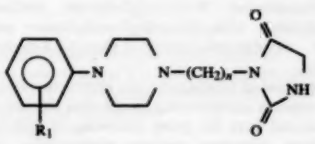
Donald R. Maxwell, Pinckney, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 22, 1982, Ser. No. 391,198

Int. Cl.³ C07D *403/08;* A61K *31/495*

U.S. Cl. 424—250 **7 Claims**

1. A compound having the structural formula



wherein n is 2, 3, or 4; R_1 is hydrogen or alkyl of from one to six carbon atoms; and the pharmaceutically acceptable salts thereof.

4,452,799
BENZISOTHIAZOLE AND BENZISOXAZOLE PIPERAZINE DERIVATIVES

Davis L. Temple, Jr., Evansville, and Joseph P. Yevich, Newburgh, both of Ind., assignors to Mead Johnson & Company, Evansville, Ind.

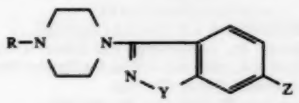
Division of Ser. No. 333,830, Dec. 23, 1981, Pat. No. 4,411,901. This application Aug. 5, 1983, Ser. No. 520,792

Int. Cl.³ C07D *413/00;* A61K *31/41*

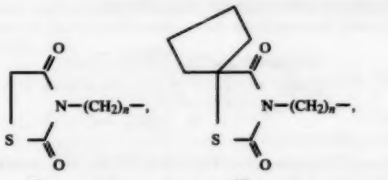
U.S. Cl. 424—250 **17 Claims**

1. A compound of Formula (I)

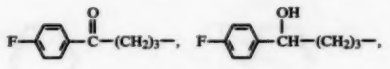
I



wherein R represents the radical



(c) (d)



(e) (f)

wherein

n is 3 or 4,

Y is oxygen or sulfur,

Z is hydrogen or halogen

or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,452,800
SALTS OF 3(N-BUTYL)-4-HYDROXY-1-PHENYL-1,8-NAPHTHYRIDINE-2(1H)-ONE AND THEIR USE IN TREATING CHRONIC OBSTRUCTIVE LUNG DISEASES

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Madison, N.J.

Filed Apr. 26, 1982, Ser. No. 371,623
Int. Cl.³ A61K *31/435;* **C07D** *471/04*
U.S. Cl. 424—256 **30 Claims**

1. A compound selected from the group consisting of calcium, ethanolamine, N-methylglucamine, diethanolamine, ethylenediamine, trishydroxyethyl-methylamine and lysine salts of 3-(n-butyl)-4-hydroxy-1-phenyl-1,8-naphthyridine-2(1H)-one.

25. A method of treating chronic obstructive lung diseases which comprises administering an effective amount of a compound selected from the group consisting of sodium, sodium monohydrate, potassium, calcium, ethanolamine, N-methylglucamine, diethanolamine, ethylenediamine, trishydroxyethyl-methylamine and lysine salts of 3-(n-butyl)-4-hydroxy-1-phenyl-1,8-naphthyridin-2-(1H)-one to a patient having said disease.

4,452,801
CHROMANS INCLUDING HETEROCYCLIC SUBSTITUENT

Joseph E. Sundeen, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 305,304, Sep. 24, 1981, Pat. No. 4,360,532, which is a division of Ser. No. 229,415, Jan. 29, 1981, Pat. No. 4,321,270. This application Sep. 13, 1982, Ser. No. 417,003
Int. Cl.³ C07D *405/04;* **A61K** *31/44*
U.S. Cl. 424—263 **6 Claims**

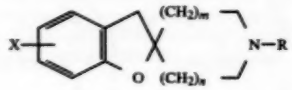
1. A compound having the name 4-(3,4-dihydro-6-methoxy-2H-1-benzopyran-2-yl)-1,2,3,6-tetrahydro-1-methylpyridine, or its p-toluenesulfonate salt (1:1).

4,452,802
ANTIHYPERTENSIVE SPIRO[BENZOFURAN-AZALKANES]

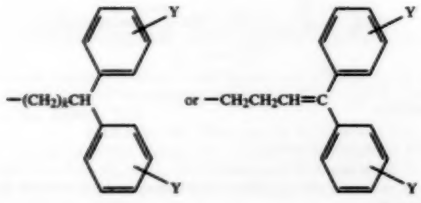
Raymond W. Kosley, Jr., Bridgewater, and Robert J. Cherill, Somerset, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Aug. 25, 1983, Ser. No. 526,193
Int. Cl.³ A61K *31/445, 31/40;* **C07D** *491/10*
U.S. Cl. 424—267 **26 Claims**

16. An antihypertensive composition comprising an effective amount of a compound of the formula



wherein X is hydrogen or halogen (F, Cl, Br, or I); m and n are each 0, 1 or 2 but m plus n is 1 or 2; and R is



k being 2 or 3 and Y being hydrogen or halogen, or a pharmaceutically acceptable acid addition salt thereof.

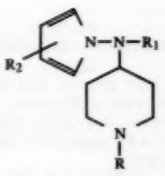
17. The antihypertensive composition as defined in claim 16 where m is 1 and n is 1.

4,452,803
PYRROLYLAMINOPIPERIDINES

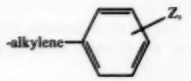
Richard C. Effland, and Joseph T. Klein, both of Bridgewater, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Sep. 19, 1983, Ser. No. 533,677
Int. Cl.³ A61K *37/445;* **C07D** *403/12, 403/04*
U.S. Cl. 424—267 **85 Claims**

1. A compound having the formula

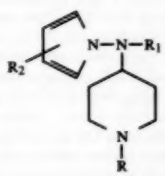


where R is hydrogen, loweralkyl, Arloweralkyl of the formula

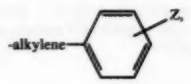


where Z is hydrogen, loweralkyl, loweralkoxy, halogen, CF_3, NO_2, NH_2; cycloalkylloweralkyl, loweralkenyl and thienylloweralkyl; R_1 is hydrogen, loweralkyl, loweralkylcarbonyl, loweralkoxycarbonyl, loweralkylthiocarbonyl, cyano, loweralkylaminocarbonyl, diloweralkylaminocarbonyl, cycloalkylcarbonyl, cycloalkylloweralkylcarbonyl and loweralkenylcarbonyl; R_2 is hydrogen, halogen and $—CH_3$; and the pharmaceutically acceptable addition salts thereof.

55. A method of alleviating pain in a mammal which comprises administering to a mammal in need thereof an effective pain relieving amount of a compound having the formula



where R is hydrogen, loweralkyl, Arloweralkyl of the formula



where Z is hydrogen, loweralkyl, loweralkoxy, halogen, CF_3, NO_2, NH_2; cycloalkylloweralkyl, loweralkenyl and thienylloweralkyl; R_1 is hydrogen, loweralkyl, loweralkylcarbonyl, loweralkoxycarbonyl, loweralkylthiocarbonyl, cyano, loweralkylaminocarbonyl, diloweralkylaminocarbonyl, cycloalkylcarbonyl, cycloalkylloweralkylcarbonyl and loweralkenylcar-

bonyl; R_2 is hydrogen, halogen and $-CH_3$; and the pharmaceutically acceptable addition salts thereof.

4,452,804

1,2-BENZISOXAZOLOXYETHYLAMINES AND INTERMEDIATES FOR THE PREPARATION THEREOF

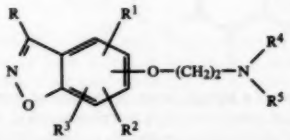
Gregory M. Shutske, Nauheim, Fed. Rep. of Germany, assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 238,276, Feb. 25, 1981, Pat. No. 4,427,691. This application Oct. 14, 1983, Ser. No. 541,831

Int. Cl.³ A61K *31/42;* **C07D** *261/20*

U.S. Cl. 424—272 **14 Claims**

1. A diuresis producing composition comprising an inert pharmaceutical carrier and, as the active ingredient, an amount effective in producing diuresis of a compound of the formula



wherein R is

wherein X is hydrogen, halogen, loweralkyl, loweralkoxy, loweralkylthio or trifluoromethyl; R^1, R^2 and R^3 are each independently hydrogen, halogen or methyl; R^4 and R^5 each independently hydrogen or loweralkyl; m is 1, 2 or 3; and the pharmaceutically acceptable acid addition salts thereof.

4,452,805

FUNGICIDAL MIXTURES COMPRISING AN IMIDAZOLE AND AN AMINE

Edward S. S. Hayes, Holgate, Australia, assignor to FBC Limited, Hauxton, England

Filed Jul. 14, 1982, Ser. No. 397,965

Claims priority, application United Kingdom, Jul. 14, 1981, 8121578

Int. Cl.³ A01N *43/50*

U.S. Cl. 424—273 R **2 Claims**

1. A fungicidal composition comprising 1-[N-propyl-N-2-(2,4,6-trichlorophenoxy)ethylcarbamoyl]imidazole and bis(8-guanadinooctyl)amine in a ratio of from 2:1 to 1:2 based on the weights of the free bases.

4,452,806

TREATING DIABETIC COMPLICATIONS WITH 5-(SUBSTITUTED PHENYL)HYDANTOINS

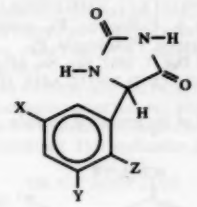
James P. Rizzi, Waterford, and Rodney C. Schnur, Noank, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 1, 1982, Ser. No. 438,199

Int. Cl.³ A61K *31/415;* **C07D** *233/76, 233/78*

U.S. Cl. 424—273 R **20 Claims**

20. A method for treating a diabetic host for diabetes associated complications which comprises administering to said host an effective amount of a compound having the formula:



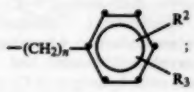
or a pharmaceutically acceptable salt thereof,

wherein each of X and Y is hydrogen, fluoro, chloro, bromo (C_{1-6})alkyl, C_{1-6}alkoxy, trifluoromethyl, amino or nitro;

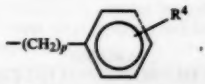
Z is $(SO)_mR$ or SO_2NHR^1;

m is 0, 1 or 2;

R is hydrogen, (C_{1-6})alkyl, chloro, methoxymethyl or



R^1 is hydrogen, furfuryl,



(C_{1-6})alkyl, omega-substituted (C_{2-6})alkyl wherein the substituent is hydroxy or dimethylamino;

wherein R^4 is hydrogen, fluoro or chloro;

n is an integer of from 1 to 4; p is 0 or an integer of from 1 to 4;

and each of R^2 and R^3 is hydrogen, fluoro, chloro, bromo, (C_{1-6})alkyl, (C_{1-6})alkoxy, amino or nitro, with the proviso that when R is chloro, m is 2.

4,452,807

(R,S)-1-(3-HYDROXY-4-METHOXYBENZOYL)-3-HYDROXY-2-PYRROLIDINONE INTERMEDIATES THEREFOR AND USE FOR TREATING CEREBRAL INSUFFICIENCY

Werner Aschwanden, Ettingen, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

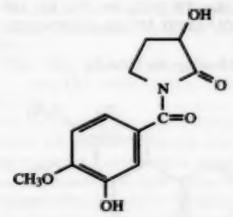
Filed Jan. 20, 1982, Ser. No. 340,920

Claims priority, application Switzerland, Feb. 5, 1981, 770/81

Int. Cl.³ A61K *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **7 Claims**

1. A compound, (R,S)-1-(3-hydroxy-4-methoxybenzoyl)-3-hydroxy-2-pyrrolidinone of the formula



I

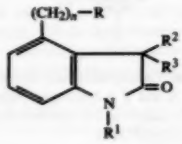
or its (R) or (S) enantiomer.

4,452,808
4-AMINOALKYL-2(3H)-INDOLONES

Gregory Gallagher, Jr., Collegeville, Pa., assignor to Smithkline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 7, 1982, Ser. No. 447,564
Int. Cl.³ C07D *209/32;* A61K *31/40*
U.S. Cl. 424—274 12 Claims

1. A compound of the structural formula:



in which:

R is amino, C_{1-6}-lower alkylamino, di-(C_{1-6}-lower alkyl-)amino, allylamino, diallylamino, N-(C_{1-6}-lower alkyl)-N-allylamino, benzylamino, dibenzylamino, phenethylamino, diphenethylamino, 4-hydroxyphenethyl amino or di-(4-hydroxyphenethyl)amino, and

R^1, R^2 and R^3 are, each, hydrogen or C_{1-4}-lower alkyl; or a pharmaceutically acceptable, acid addition salt thereof.

4,452,809
TRANS-4-(2-CHLOROPHENOXY)-1-ETHYL-3-PYRROLIDINOL AND ANTI-DEPRESSANT USE THEREOF

David A. Walsh, and William J. Welstead, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation of Ser. No. 128,691, Mar. 10, 1980, abandoned. This application Apr. 22, 1983, Ser. No. 485,497
Int. Cl.³ A61K *31/40;* C07D *207/12*
U.S. Cl. 424—274 3 Claims

1. A method of treating depression in animals which comprises administering to said animal an effective amount of a trans-4-(2-chlorophenoxy)-1-ethyl-3-pyrrolidinol and the pharmaceutically acceptable acid addition salts thereof.

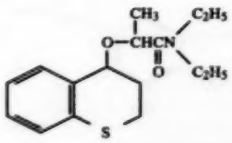
2. Trans-4-(2-chlorophenoxy)-1-ethyl-3-pyrrolidinol and the pharmaceutically acceptable addition salts thereof.

4,452,810
INSECT REPELLENT: N,N-DIETHYL-2-(4-THIOCHROMANYLOXY)-PROPIONAMIDE

Nathan S. Bunker, Martinez, and Rayman Y. Wong, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 12, 1983, Ser. No. 531,135
Int. Cl.³ C07D *327/00;* A01N *43/02*
U.S. Cl. 424—275 4 Claims

1. A compound having the formula

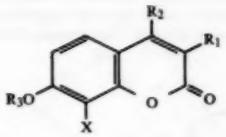


4,452,811
MONOHALOGENATED DERIVATIVES OF 7-HYDROXY-COUMARIN, PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME AND METHODS OF USING SAID COMPOSITIONS

Francesco della Valle, Padova, Italy, assignor to Fidia S.p.A., Abano Terme, Italy

Continuation of Ser. No. 160,175, Jun. 17, 1980, abandoned, and a continuation-in-part of Ser. No. 952,460, Oct. 18, 1978, abandoned. This application Feb. 1, 1982, Ser. No. 344,521
Claims priority, application Italy, Nov. 17, 1977, 29765 A/77
Int. Cl.³ A61K *31/37;* C07D *311/08*
U.S. Cl. 424—281 18 Claims

1. A substantially pure compound having the formula:



I

wherein X represents a halogen atom, R_1 is selected from the group consisting of piperidino ethyl, morpholino ethyl, diethylamino ethyl and diethylamine propyl, R_2 is selected from the group consisting of methyl and phenyl, and R_3 is selected from the group consisting of ethoxycarbonyl methyl and ethoxycarbonyl ethyl or a pharmaceutically acceptable salt thereof.

4,452,812
ORGANIC COMPLEX OF PLATINUM, ITS PREPARATION AND ITS USE FOR TREATING MALIGNANT TUMORS

Jean-Pierre Macquet, Auzeville, France, assignor to Sanofi, Paris, France

Filed Apr. 27, 1981, Ser. No. 257,939
Claims priority, application United Kingdom, Apr. 28, 1980, 8014109
Int. Cl.³ C07F *15/00;* A01N *55/02;* A61K *31/28*
U.S. Cl. 424—287 20 Claims

13. A pharmaceutical composition for inhibiting tumors in warm-blooded animals which comprises an effective amount of cis-isocitrato (1,2-diaminocyclohexane) platinum (II) in a pharmaceutically acceptable vehicle, which cis-isocitrato (1,2-diaminocyclohexane) platinum (II) is effective to inhibit tumors selected from the group consisting of leukemia L1210 or sarcoma S180 in baboons.

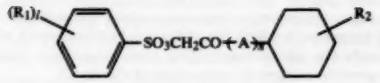
19. A method of inhibiting tumors in a warm-blooded animal which comprises administering to said animal an effective amount of the composition of claim 13, which composition is effective to inhibit tumors selected from the group consisting of leukemia L1210 or sarcoma S180 in baboons.

4,452,813
SULFONATE DERIVATIVES, PROCESS FOR PREPARING SAME AND ANTILIPEMIC COMPOSITIONS CONTAINING THE DERIVATIVE

Setsuro Fujii, Toyonaka; Toshihiro Hamakawa, Naruto; Kazuo Ogawa, Tokushima; Yoshiyuki Muranaka, Tokushima, and Sadao Hashimoto, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

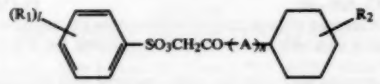
Filed May 11, 1982, Ser. No. 377,074
Claims priority, application Japan, May 22, 1981, 56-78530; Dec. 29, 1981, 56-212950
Int. Cl.³ A61K *31/255;* C07C *143/68*
U.S. Cl. 424—303 2 Claims

1. A sulfonate derivative represented by the formula



wherein R_1 is lower alkyl, lower alkoxy or halogen, l is an integer of from 0 to 3, n is 0 or 1, A is straight-chain or branched-chain alkylene having 1 to 4 carbon atoms, and R_2 is hydrogen or lower alkyl but, when n is 0 or 1 and A is straight-chain alkylene with 1 to 4 carbon atoms, is not hydrogen.

2. An antilipemic composition comprising an effective amount of a sulfonate derivative represented by the formula



wherein R_1 is lower alkyl, lower alkoxy or halogen, l is an integer of from 0 to 3, n is 0 or 1, A is straight-chain or branched-chain alkylene having 1 to 4 carbon atoms, and R_2 is hydrogen or lower alkyl but, when n is 0 or 1 and A is straight-chain alkylene with 1 to 4 carbon atoms, is not hydrogen and a pharmaceutically acceptable diluent.

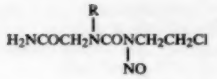
4,452,814

NITROSOUREA DERIVATIVES

Tetsuo Suami, 5-8, Nakamachi 3-chome, Musashino-shi, Tokyo, Japan

Filed Jan. 12, 1982, Ser. No. 338,923
Claims priority, application Japan, Jan. 12, 1981, 56-2135
Int. Cl.³ A61K *31/17*; **C07C** *127/16*
U.S. Cl. 424—322 **4 Claims**

1. A nitrosourea derivative of the following formula (I):



(I)

wherein R represents hydrogen or methyl.

4,452,815

METHOD OF UTILIZING D,L-FENFLURAMINE FOR MODIFYING FEEDING BEHAVIOR

Richard J. Wurtman, and Judith Wurtman, both of Boston, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 159,549, Jun. 16, 1980, Pat. No. 4,309,445. This application Jul. 30, 1981, Ser. No. 288,583
The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.
Int. Cl.³ A61K *31/135*
U.S. Cl. 424—330 **2 Claims**

1. A method of treating human patients having the syndrome of abnormal carbohydrate craving, between meals which consists of administering to said patient between about 20 and 60 mg/day of d,l-fenfluramine.

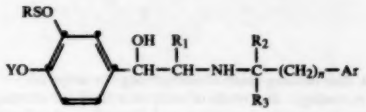
4,452,816

METHOD OF LOWERING BLOOD PRESSURE BY α-{[ARYLALKYLAMINO]ALKYL}-4-HYDROXY-3-(LOWERALKYLSULFINYL)BENZENEMETHANOLS

Richard E. Philion, Sand Lake, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 937,928, Aug. 30, 1978, Pat. No. 4,374,149, which is a continuation-in-part of Ser. No. 803,372, Jun. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,856, Jun. 25, 1976, abandoned. This application Jul. 28, 1982, Ser. No. 402,793
Int. Cl.³ A01N *33/02*
U.S. Cl. 424—330 **8 Claims**

1. The method of lowering blood pressure in a mammal which comprises administering to said mammal a blood pressure lowering effective amount of a compound having the formula



wherein:

R_1, R_2 and R_3 are independently hydrogen or lower alkyl;

n is an integer from 1 to 3;

Ar is phenyl, methylenedioxyphenyl or phenyl having from one to three substituents selected from the group consisting of halo, lower alkyl, hydroxy and lower alkoxy;

R is lower alkyl;

Y is hydrogen, lower alkyl, lower alkoxy-lower alkyl, lower alkanoyl, aroyl, benzenesulfonyl or toluenesulfonyl;

or a medicinally acceptable acid-addition salt thereof.

4,452,817

ANAESTHETIC COMPOSITIONS CONTAINING 2,6-DIISOPROPYLPHENOL

John B. Glen, and Roger James, both of Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 559,880, Mar. 19, 1975, Pat. No. 4,056,635. This application Sep. 19, 1977, Ser. No. 834,292
Claims priority, application United Kingdom, Mar. 28, 1974, 13739
Int. Cl.³ A61K *31/05*
U.S. Cl. 424—346 **3 Claims**

1. A sterile pharmaceutical composition, for use as an anaesthetic by parenteral administration to a warm-blooded animal, which comprises a sterile solid or semi-solid mixture of an anaesthetically effective amount of the compound 2,6-diisopropylphenol with a solid diluent selected from the group consisting of lactose, saccharin sodium and a cyclodextran.

4,452,818

EXTRAOCULAR METHOD OF TREATING THE EYE WITH LIQUID PERFLUOROCARBONS

Sterling J. Haidt, 515 South Dr., Suite 20, Mountain View, Calif. 94040

Filed Mar. 19, 1982, Ser. No. 359,770
Int. Cl.³ A61K *31/025, 31/03*
U.S. Cl. 424—352 **11 Claims**

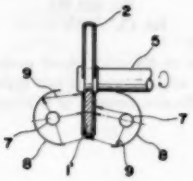
1. A method for treating the eyes and providing lubrication and protection to the surface of the eye which comprises topically applying to the eye a composition comprising as an essential ingredient a transparent or light transmissive, stable, inert, viscous perfluorocarbon or substituted derivative thereof having oxygen carrying properties in an amount sufficient to act as a lubricant.

4,452,819

DISC COATING METHOD

Takao Inoue; Yukio Maeda, and Masami Uchida, all of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Aug. 30, 1982, Ser. No. 413,064
Claims priority, application Japan, Sep. 8, 1981, 56-142062
Int. Cl.³ B05D 3/06
U.S. Cl. 427—54.1 20 Claims



1. A disc coating method comprising the steps of:
(1) mounting a disc made of resin on a shaft for rotating said disc in a vertical position and thereafter, simultaneously applying coating liquid to opposite surfaces of said disc while rotating said disc at a first velocity;
(2) removing unnecessary coating liquid applied to the opposite surfaces of said disc therefrom while rotating said disc at a second velocity greater than said first velocity; and
(3) simultaneously curing the coating liquid applied to the opposite surfaces of said disc by simultaneously irradiating light energy thereon while rotating said disc at a third velocity greater than said first velocity but less than said second velocity.

4,452,820

GUM BASE AND CHEWING GUM CONTAINING SAME

Ronald P. D'Amelia, Hicksville, N.Y.; John J. Stroz, Monroe, Conn., and Rouben Kachikian, Old Tappan, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 270,710, Jun. 5, 1981, abandoned. This application May 13, 1982, Ser. No. 377,804
Int. Cl.³ A23G 3/30
U.S. Cl. 426—3 48 Claims

1. A single phase formulation for a homogeneous gum base composition containing an elastomer and a resin in the absence of ester gums required to compatibilize said elastomer comprising a plasticized styrene-butadiene elastomer and a plasticized resin, said elastomer being plasticized to make it compatible with other gum base components by adding a plasticizer selected from the group consisting of butyl stearate, butyl oleate, glyceryl trioleate, oleic acid, and mixtures thereof in an amount sufficient to permit formation of the single phase homogeneous admixture, said plasticized resin being plasticized to make it compatible with other gum base components and with said styrene-butadiene elastomer by adding a plasticizer in an amount sufficient to permit formation of the single phase homogeneous admixture.

4,452,821

CONFECTIONERY PRODUCT, PARTICULARLY CHEWING GUM, AND PROCESS FOR ITS MANUFACTURE

Gerhard Gergely, Gartengasse 8, A-1053 Vienna, Austria

Filed Dec. 18, 1981, Ser. No. 332,057
Int. Cl.³ A23G 3/30, 3/00
U.S. Cl. 426—5 18 Claims

1. A confectionery product comprising a confection having an inner and outer phase and an additive selected from the group consisting of syrup, sweetener, coloring, flavoring, aroma, caffeine and mixtures thereof, wherein the additive is contained in said inner phase as a solid solution or a mixture therewith, said inner phase comprising at least one wax with functional groups with which the additive is miscible, said outer phase comprising at least one second wax without functional groups with which the additive is immiscible and which surrounds the additive-containing inner phase and forms a homogeneous mixture or solid solution therewith.

4,452,822

EXTRACTION AND INTENSIFICATION OF ANTHOCYANINS FROM GRAPE POMACE AND OTHER MATERIAL

Anil J. Shrikhande, Madera, Calif., assignor to United Vintners, Inc., San Francisco, Calif.

Filed May 17, 1982, Ser. No. 379,158
Int. Cl.³ A23L 1/277
U.S. Cl. 426—49 11 Claims

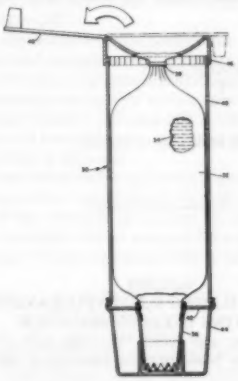
6. A method of producing an anthocyanin extract from the pulp of a vegetable source material comprising the following steps:
(a) treating the vegetable source material with an aqueous solution of sulfur dioxide at an elevated temperature to extract anthocyanin material.
(b) treating the extract enzymatically to eliminate suspended solid material,
(c) reducing the sulfur dioxide content of the resulting extract while leaving sufficient sulfur dioxide to protect the anthocyanin material from oxidation, and acidifying the extract,
(d) adsorbing the anthocyanin material from the product of step (c) onto an ion exchange resin and
(e) eluting the adsorbed anthocyanin material.

4,452,823

PACKAGED FROZEN FOOD PRODUCT

James M. Connolly, Dover, Mass.; Robert G. Morley, Stone Mountain, and W. Ronald Ashton, Duluth, both of Ga., assignors to Landwide Foods, Inc., Dover, Mass.

Continuation of Ser. No. 228,546, Jan. 26, 1981, abandoned. This application Apr. 11, 1983, Ser. No. 483,766
Int. Cl.³ A23G 9/28, 9/02
U.S. Cl. 426—115 5 Claims



1. A packaged frozen product for providing in the home a frozen food of soft serve consistency, said product comprising
A. container means having collapsible liquid-tight chamber means apertured by dispensing spout means, said chamber means being collapsible at temperatures at least in the range of 0° to 10° F. for pressuring the contents thereof sufficiently for dispensing through said spout, and
B. a whipped emulsified frozen food within said chamber means,

said frozen food being extrudable in continuous form and coneable at temperatures at least in the range of 0° to 10° F. for serving by extrusion from said container means at home freezer temperatures and consisting essentially, in unflavored form, of a controlled emulsion of protein, water, sugars, stabilizers, and emulsifiers,

said protein accounting for sustantially 3% to 7% by weight of the food,

said water accounting for substantially 53% to 60% by weight of the food,

said sugars accounting for substantially 25% to 29% by weight of the food, and

said emulsifiers and stabilizers accounting for substantially 1.1% to 2.7% by weight of the food.

4,452,824

SOFT, FROZEN DESSERT FORMULATION

Bruce A. Cole, 76 Neperan Rd., Tarrytown, N.Y. 10591; Harold I. Levine, 20 B Edison Ct., Monsey, N.Y. 10952; Michael T. McGuire, 76-06 58th Rd., Elmhurst, N.Y. 11373; Kathleen J. Nelson, 8325 East Harry #803, Wichita, Kans. 67207, and Louise Slade, 20 B. Edison Ct., Monsey, N.Y. 10952

Continuation-in-part of Ser. No. 320,168, Nov. 10, 1981, Pat. No. 4,374,154. This application Nov. 10, 1982, Ser. No. 440,694

Int. Cl.³ A23G *9/02, 9/04*

U.S. Cl. 426—565 **7 Claims**

1. A frozen, aerated dessert product which can be extruded by hand from a collapsible package at temperatures between 0° F. and 10° F., said product having an equilibrium melting temperature (T_m) between −3° C. and −10° C. and said product having a water content of from 45% to 63% by weight, a fat content of from 2% to 15% by weight, a protein content of from 2% to 10% by weight and a total carbohydrate level of from 24% to 34%, said carbohydrate level including an amount of sugar alcohols up to 7% by weight and/or polyhydric low-molecular weight alcohols up to 5% by weight, and said carbohydrates being distributed such that the ratio of higher saccharides to mono- and disaccharides (Ratio 1) and the ratio of disaccharides to monosaccharides (Ratio 2) satisfy the relationship of $11 \leqq (28 \times \text{Ratio } 1) + \text{Ratio } 2 \leqq 28$.

4,452,825

SORBITOL-CONTAINING HARD CANDY

Kenneth J. Klacik, Spring Valley; Walter V. Vink, Purdys, both of N.Y., and Paul R. Fronczkowski, Oakland, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Sep. 1, 1982, Ser. No. 413,655

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—658 **19 Claims**

1. A method of preparing a clear amorphous sugar-free hard candy from an aqueous sorbitol solution comprising:

heating an aqueous sorbitol solution containing less than about 3% by weight of mannitol until the resulting mass contains less than about 3.0% but more than about 1.0% moisture;

cooling said mass to a temperature range of from about 160° F. to about 200° F;

providing crystal nucleation sites by a method selected from the group consisting of adding one of crystalline sorbitol, mannitol, or other equivalent sugar alcohol seeding material and mixtures . . . thereof and applying a nucleating initiator-promoter selected from the group consisting of high speed stirring, microwave, and supersonic energy sufficient to obtain a hard candy set time of no more than about 30 minutes, and, optionally adding any flavorant;

depositing measured amounts of said mass while at said temperaturerange into a metal mold preheated to a temperature range of from about 70° F. to about 120° F; and

allowing said sorbitol mass to set in air having relative humidity roughly equivalent to the equilibrium relative humidity of the deposited candy whereby said candy mass sets to a hardness sufficient to effect removal of hard candy units from said mold and to further handle in commercial processes.

4,452,826

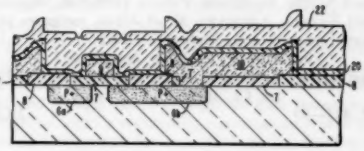
USE OF POLYSILICON FOR SMOOTHING OF LIQUID CRYSTAL MOS DISPLAYS

Steven E. Shields, San Diego, and Bruce G. Fletcher, Vista, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 209,455, Nov. 24, 1980, Pat. No. 4,382,658. This application Dec. 13, 1982, Ser. No. 449,107

Int. Cl.³ G02F *1/133*

U.S. Cl. 427—38 **6 Claims**



1. A process for making a liquid crystal display monolithically formed on a metal insulator semiconductor integrated circuit comprising:

forming a first insulating layer over said integrated circuit;

forming a polycrystalline silicon layer over said first insulating layer;

smoothing the top surface of said silicon layer;

forming a second insulating layer over said silicon layer and thereafter defining openings in said second insulating layer over portions of said silicon layer which are to be removed;

etching said silicon layer using said second insulating layer as a mask so as to form islands in said silicon layer and contact openings therethrough;

forming a third insulating layer which covers at least those surfaces of said silicon layer which were exposed during said etching step;

forming contact openings through said first and third insulating layers in registration with said contact openings through said silicon layer;

forming pixel control electrodes over each of said silicon islands; and

placing a liquid crystal layer over said electrodes.

4,452,827

METHOD FOR SURFACE MODIFICATION OF SYNTHETIC ARTIFICIAL AND NATURAL POLYMERS AND POLYMER COMPOSITIONS USING METALS, NON-METALS AND GASES

Kolyo T. Kolev; Lilly B. Peeva; Assen E. Djakov; Roesen A. Yankov; Blagoy G. Amov, and Stoyan B. Stoyanov, all of Sofia, Bulgaria, assignors to Institute Za Yadreni Izsledvaniya I Yadrena Energetika, Sofia, Bulgaria

Continuation of Ser. No. 486,300, Apr. 20, 1983, abandoned, which is a continuation of Ser. No. 241,357, Mar. 6, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 538,360

Claims priority, application Bulgaria, Mar. 13, 1980, 47001

Int. Cl.³ B05D *7/02*

U.S. Cl. 427—38 **1 Claim**

1. A method of implanting elements of a substance in a body of a polymeric material, comprising the steps of:

(a) ionizing said substance and producing an ion beam of said element together with other elements derived from said substance;

(b) accelerating said beam to provide an energy of the ions of said element and substantially 10^2 to 10^7 electronvolts;

(c) subjecting said beam to electromagnetic separation

whereby a substantially pure stream of ions of said element at said energy is formed; and

(d) training said stream with an ion current of substantially 10^{-8} to 10^{-2} A/cm^2 onto said body to implant said ions of said element in a surface zone to a depth of up to substantially 10^{-6} m in an implantation dose of substantially 10^{10} to 10^{23} ions per cm^2, said stream being directed against said body under a pressure of 10^{-5} to 10^{-4} Torr and said element being selected from the group which consists of aluminum, tin, nickel, boron, phosphorus, silicon, carbon and oxygen.

4,452,828

PRODUCTION OF AMORPHOUS SILICON FILM

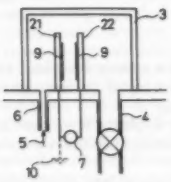
Masaharu Namba, Kanagawa; Mitsuru Yamauchi, Nagano, and Toyoki Kazama, Kanagawa, all of Japan, assignors to Fuji Electric Company, Ltd., Kawasaki, Japan

Filed May 10, 1982, Ser. No. 376,632

Claims priority, application Japan, May 12, 1981, 56-71024

Int. Cl.^{3} B05D *3/04, 3/14*

U.S. Cl. 427—39 **2 Claims**



1. A method for producing an amorphous Si film on a substrate positioned adjacent to one of a pair of spaced-apart electrodes situated within a reaction chamber, the method comprising the steps of:

heating the substrate;

introducing a gaseous Si compound into the reaction chamber;

generating a glow discharge within the reaction chamber by imposing an electric field between the pair of electrodes, the electric field being established by applying an appropriate driving voltage to one of the pair of electrodes and ground to the other; and

reversing the application of the driving voltage and ground to the electrodes at least once during the production of the film.

4,452,829

SPRAYABLE, CROSS-LINKED TRIMER POLYMER AND METHOD OF USE AND PREPARATION

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Filed Jun. 20, 1983, Ser. No. 505,793

Int. Cl.^{3} C08G *18/14, 18/20;* **B05D** *1/00, 1/05*

U.S. Cl. 427—209 **23 Claims**

1. A process of preparing a sprayable polyisocyanurate composition, which composition is prepared by mixing and reacting together substantially equal volumes of an A side mixture and a B side mixture, the A side mixture comprising 60 to 100 parts of a MDI having an average functionality of less than about 2.4 and 0 to 40 parts of a polyether triol having a molecular weight of from about 1000 to 6000 and a hydroxyl number of less than about 50, and the B side mixture comprising from about 5 to 40 parts of diethylene glycol, about 50 to 90 parts of a polyether triol having a molecular weight of from 1000 to 6000 and a hydroxyl number of about 50 or less, a catalytic amount of a trimerization catalyst to provide for the rapid exothermic trimerization reaction of the A and B mixtures on mixing, and a catalytic amount of a heat-activated catalyst activated at about 140° F., to provide, on mixing and reacting, a composition which reacts within about 5 seconds, creams within 10 seconds and is substantially cured within 30 seconds.

11. The process of claim 1 which comprises a sprayable, foamable composition which includes a blowing amount of a fluorocarbon blowing agent, a cell-control amount of a surfactant and a tetravalent tin catalyst, to provide a cream time after mixing of less than about 10 seconds.

12. The process of claim 11 which includes spraying the sprayable foamable composition onto a substrate to provide, after spraying and reacting, a cured foam coating layer on a substrate.

4,452,830

ELECTROCONDUCTIVE POWDER AND PROCESS FOR PRODUCTION THEREOF

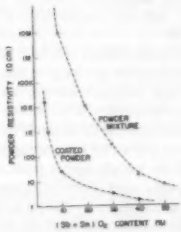
Motohiko Yoshizumi, Urawa, Japan, assignor to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 186,555, Sep. 12, 1980, Pat. No. 4,373,013. This application Nov. 3, 1982, Ser. No. 438,761

Claims priority, application Japan, Sep. 14, 1979, 54-117342; Feb. 13, 1980, 55-16217; Jun. 23, 1980, 55-84997

Int. Cl.^{3} H01B *1/06;* **B05D** *7/00*

U.S. Cl. 427—215 **6 Claims**



1. A process for producing electroconductive powder which comprises the steps of:

providing an aqueous dispersion of titanium oxide particles;

providing a solution containing a hydrolyzable tin salt and a hydrolyzable antimony salt, said solution remaining free of hydrolyzed tin salt and hydrolyzed antimony salt;

adding said solution to said dispersion under agitation while said dispersion is maintained at a temperature of 60° to 100° C., to hydrolyze said tin salt and said antimony salt as a result of contact between said solution and said dispersion, thereby to produce titanium oxide particles coated with antimony-containing tin oxide; and

recovering the coated titanium oxide particles.

4,452,831

METHOD FOR THE PRODUCTION OF FOILS FROM ELASTOMERIC MATERIAL

Walter Eichberger, Perchtoldsdorf, and Alfred Blaschke, Guntramsdorf, both of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

PCT No. PCT/AT80/00025, 371 Date Mar. 20, 1981, 102(e) Date Mar. 20, 1981, PCT Pub. No. WO81/00257, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 21, 1980, Ser. No. 253,922

Claims priority, application Austria, May 14, 1980, 2572/80

Int. Cl.^{3} B05D *3/12, 3/02*

U.S. Cl. 427—348 **15 Claims**

1. A method of producing elastomeric foils comprising continuously impregnating a non-woven fabric with a resinous composition in liquid form selected from the group consisting of (a) a resin based or polyhydroxy compounds or polyamines or mixtures thereof and polyisocyanates, (b) resins based on polyhydroxy compounds or polyamines or polycarboxyl com-

pounds or mixtures thereof and polyepoxides and (c) an impregnating mixture based on rubber latex to form a sticky foil, drying and curing the impregnated fabric in the form of a sticky foil freely suspended in hot air and removing the dried non-sticky, elastomeric foil.

4,452,832

METHOD FOR DEPOSITING A UNIFORM LAYER OF PARTICULATE MATERIAL ON THE SURFACE OF AN ARTICLE HAVING INTERCONNECTED POROSITY

George E. Wrenn, Jr., Clinton, and John Lewis, Jr., Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,364

Int. Cl.³ B05D *1/18, 3/02, 3/12*

U.S. Cl. 427—350 **13 Claims**

13. A method for forming an adhesive graphite coating on a carbon article having interconnected porosity, said method comprising:

providing a vessel containing a liquid, said liquid and vessel defining a headspace, said liquid containing a dispersion of colloidal graphite particles sized to lodge in surface pores of said article and also containing in solution a resin binder, said liquid comprising a first organic solvent selected from the group consisting of acetone and homologs thereof, and a second organic solvent selected from the group consisting of toluene and homologs thereof,

immersing said article in said liquid to fill interconnecting pores thereof with said liquid,

evacuating said headspace to selectively flash-off the first solvent from said interconnecting pores and cause liquid to flow into said article, thus lodging said particles in said surface pores and forming a resin-containing particulate coating on said article,

recovering the resulting coated article, and

heating the recovered article to dry the same and effect resin-bonding of said coating.

4,452,833

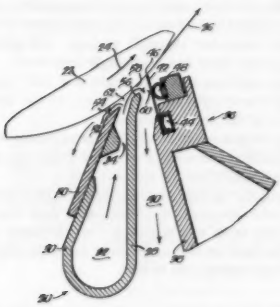
PAPER COATING METHOD

Sherwood G. Holt, Biron, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Feb. 8, 1982, Ser. No. 347,004

Int. Cl.³ B05B *3/12;* **B05C** *5/02*

U.S. Cl. 427—356 **5 Claims**



1. A method of applying coating liquid to a moving web of paper, comprising the steps of:

applying coating liquid to one surface of a moving web of paper carried through an application zone having spaced front and rear edges, a wall intermediate the edges and spaced from the web and from the front and rear edges, and laterally spaced side edges, the application zone being defined between the front and rear edges;

forming and maintaining a reservoir of coating liquid under pressure on the web throughout the application zone;

doctoring the coating liquid on the web at the rear edge of the application zone;

maintaining the coating liquid throughout the application zone under pressure by substantially sealing the side edges of the zone and by establishing a first liquid seal in a first gap defined between the web and the front edge of the application zone which extends substantially across the width of the web and by establishing a second liquid seal in a second gap defined between the wall and the rear edge of the application zone, whereat the web is doctored, which extends substantially across the width of the web; and

continuously flowing coating liquid under pressure into the application zone to substantially completely and continuously fill the first and second gaps with coating liquid for forming the first and second liquid seals, for sealing off the front and rear edges of the zone and preventing entry of air and foreign matter through the gaps thereat and into the zone, and for maintaining a pressurized area of coating liquid throughout the zone between the front and rear edges and for continuously purging the zone.

4,452,834

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS OR SOLUTIONS OF POLYURETHANE POLYUREAS CONTAINING HEAT ACTIVATED CROSS-LINKING AGENTS, THE DISPERSIONS OR SOLUTIONS OBTAINABLE BY THIS PROCESS, AND THEIR USE FOR THE PRODUCTION OF COATINGS

Klaus Nachtkamp, Cologne; Franz Weider, Leverkusen; Klaus Noll; Josef Pedain, both of Cologne, and Klaus Hoehne, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 420,172

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137748

Int. Cl.³ B05D *3/02;* **C08L** *75/06*

U.S. Cl. 427—379 **11 Claims**

1. A process for the preparation of aqueous dispersions or solutions of cross-linkable polyurethane polyureas which are stable in storage and contain cross-linking agents capable of being activated by heat, which comprises preparing a mixture containing

(a) prepolymers having at least about 1.8 free isocyanate groups (on statistical average) and containing a quantity of chemically incorporated hydrophilic groups and/or external, non-chemically bound emulsifiers sufficient to ensure the dispersibility or solubility of the systems in water,

(b) hydrophobic polyisocyanates which have blocked isocyanate groups and are neither soluble nor dispersible in water, and

(c) compounds having at the most one free aminic or hydrazinic primary or secondary amino group and at least one blocked group which under the influence of water forms a free aminic or hydrazinic primary or secondary amino group, and a total of at least 2 at least partially blocked aminic or hydrazinic primary and/or secondary amino groups

in the absence of water and subsequently mixing said mixture with water.

4,452,835

MULTILAYER FILM FOR PRIMAL MEAT PACKAGING

Ganapathy Vasudevan, E. Windsor, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 23, 1982, Ser. No. 422,079

Int. Cl.³ B32B *27/08;* **A21D** *10/02;* **B29D** *5/04*

U.S. Cl. 428—35 **22 Claims**

1. A multilayer film suitable for packaging a primal red meat cut having a first outer layer comprising a mixture containing

between about 3 percent and about 12 percent by weight, based on the weight of said mixture, of low molecular weight thermoplastic hydrocarbon resin selected from the group consisting of alpha-methylstyrene copolymerized with styrene, 30 to 60 percent hydrogenated alpha-methylstyrene-styrene copolymers, and ethylene-vinyl acetate copolymers containing between about 8 and about 30 percent by weight of vinyl acetate based on the weight of said ethylene-vinyl acetate copolymer, the balance of said mixture comprising a polymeric resin selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, and mixtures thereof; a core layer comprising an acrylonitrile copolymer; and a second outer layer comprising a polymeric resin selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, and mixtures thereof; wherein said first outer layer has a thickness of between about 0.6 mil and about 1.2 mils, said core layer has a thickness of between about 0.3 mil and about 0.8 mil, said second outer layer has thickness of between about 0.6 mil and about 1.2 mils.

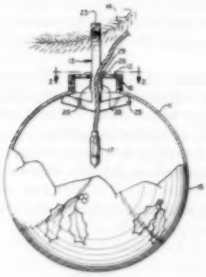
8. A process of producing a multilayer film suitable for packaging a primal red meat cut comprising coextruding a first outer layer comprising a mixture containing between about 3 percent and about 12 percent by weight, based on the weight of said mixture, of low molecular weight thermoplastic hydrocarbon resin selected from the group consisting of alpha-methylstyrene copolymerized with styrene, 30 to 60 percent hydrogenated alpha-methylstyrene-styrene copolymers, and ethylene-vinyl acetate copolymers containing between about 8 and about 30 percent by weight of vinyl acetate based on the weight of said ethylene-vinyl acetate copolymer, the balance of said mixture comprising a polymeric resin selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, and mixtures thereof; a core layer comprising an acrylonitrile copolymer; and a second outer layer comprising a polymeric resin selected from the group consisting of polyolefins, ethylene-vinyl acetate copolymers, and mixtures thereof; said first outer having a thickness of between about 0.6 mil and about 1.2 mils, said core layer having a thickness of between about 0.3 mil and about 0.8 mil, and said second outer layer having a thickness of between about 0.6 mil and about 1.2 mils.

4,452,836

CAP AND CLIP ASSEMBLY FOR ATTACHMENT TO ORNAMENT

James W. Daniel, Jr., Memphis, Tenn., assignor to The Decor Noel Corporation, Memphis, Tenn.

Filed Feb. 1, 1983, Ser. No. 463,026
Int. Cl.³ A47G *33/08*
U.S. Cl. 428—11 **5 Claims**



1. An assembly for attachment to a hollow ornament having an open end, comprising:

a cap adapted to fit over the open end of the ornament, said cap defining a cut-out area;

a clip having an elongated central portion and outwardly extending end portions, said clip further having stop means located at each end of the central portion and teeth means interposed between said stop means and said end portions;

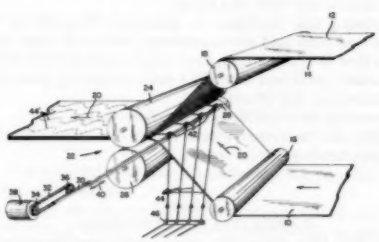
said cap and said clip being comprised of a flexible and bendable plastic material which is electrically non-conductive and fire resistant, the central portion of said clip extending in U-shape through the cut-out area of said cap and the end portions of the clip engaging the interior part of the hollow ornament beneath its open end, the stop means being located above the cap and of sufficient length compared to the cut-out area to prevent the central portion of the clip from falling through the cut-out area into the interior of the ornament, said teeth means being adjustably engaged with the edges of the cut-out area to vary the position of the end portions within the hollow ornament to maximize engagement with the interior part of the hollow ornament to thereby accommodate different configurations and sizes of ornaments.

4,452,837

WEB REINFORCED WITH STRING-TYPE ADHESIVE AND METHOD OF MANUFACTURING SAME

Victor H. Clausen, Vancouver, Wash., and Paul Kaplan, Peapack, N.J., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation of Ser. No. 47,255, Jun. 11, 1979, abandoned. This application May 4, 1981, Ser. No. 260,489
Int. Cl.³ B32B *3/28, 3/02*
U.S. Cl. 428—35 **12 Claims**



1. (Twice amended) A process for forming a reinforced corrugated board comprising the steps of:

(a) conducting a linear and a single face web having flutes on one side along a path defined as the in-machine direction;

(b) applying in a generally serpentine pattern a plurality of linear members pre-coated with hardened thermoplastic hot melt adhesive through at least one guide member between said liner and said single face web;

(c) joining said liner and said single face web together using a starch based adhesive in addition to the thermoplastic adhesive of the linear member;

(d) raising the temperature of the thermoplastic adhesive and the additional adhesive above the softening point of the thermoplastic adhesive; and

(e) allowing the thermoplastic hot melt adhesive to bond the reinforcing members between said first liner and said single face web, and allowing the additional adhesive to bond the liner to the single face web, thereby forming a reinforced corrugated board.

4,452,838

HEAT-SHRINKABLE TUBES

Keiji Ueno, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 25, 1982, Ser. No. 411,383
Claims priority, application Japan, Aug. 25, 1981, 56-133676
Int. Cl.³ C08F *2/46*
U.S. Cl. 428—36 **11 Claims**

1. A heat-shrinkable tube prepared by molding a resin com-

position in a tubular form, irradiating the tube with electron rays to cross-link it, and expanding the cross-linked tube, the resin composition comprising a base polymer composition consisting of from 5 to 80% by weight of a graft copolymer, and 95 to 20% by weight of chlorinated polyethylene having a crystallinity of from 1 to 25%, said graft copolymer being prepared by graft-copolymerizing polyvinyl chloride to an ethylene-vinyl acetate copolymer having a vinyl acetate content of at least 50% by weight.

4,452,839

FORM AND METHOD OF FABRICATING A GLASS LAMPSHADE

Howard L. Worden, P.O. Box 519, Granger, Wash. 98932

Filed May 27, 1982, Ser. No. 382,489
Int. Cl.³ B44F *1/06, 3/00*
U.S. Cl. 428—38 **6 Claims**

1. A method of fabricating a lampshade or the like which comprises:

fabricating a plurality of segments of the shade by the steps of:

(a) placing a form which represents a segment of the completed lampshade upon a supporting surface, the form having a grid of horizontal and vertical lines on its outer surface;

(b) aligning a plurality of cartoon strips with the grid on the outer surface of the form and securing the strips to the form;

(c) placing a series of discrete pieces of glass on the strips;

(d) securing the discrete pieces to one another to form a rigid segment of the shade;

(e) removing the segment of the shade from the form and attached strips; and

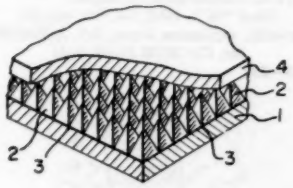
securing a plurality of segments of the shade to one another to form a complete shade.

4,452,840

PLASTIC INTERLAYER FOR LAMINATION WITH HEIGHTS OF 10 TO 500 MICRONS

Takashi Sato, and Masahisa Ishikawa, both of Tsuchiura, Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,353
Claims priority, application Japan, Mar. 12, 1981, 56-35888
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—156 **6 Claims**



1. A plastic interlayer for lamination, said interlayer comprising a thermoplastic film or sheet at least one surface of which has many uniformly shaped projections:

(a) at least substantially all of the projections on the surface being uniformly spaced from one another in both directions on said at least one surface;

(b) both the crests and the roots of at least substantially all said projections being at the same levels; and

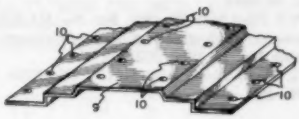
(c) the heights of which are in a range of 10μ to 500μ.

4,452,841

UNSUPPORTED SHAPED SOUND BARRIER COMPONENT

Paul E. Oliveira, New Bedford, Mass., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 20, 1982, Ser. No. 451,112
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—174 **5 Claims**



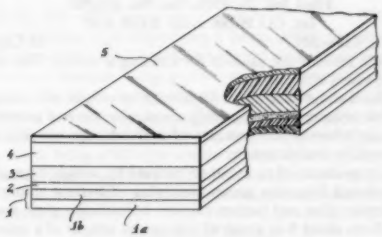
1. An unsupported shaped sound barrier component having a thickness of 0.0076 to 1.72 centimeters consisting essentially of on a weight basis 100 parts of a thermoplastic loaded with more than 200 parts up to about 400 parts of barium sulfate and 1 to 500 parts of zinc oxide per 100 of thermoplastic, said component being at least partially cured.

4,452,842

LAMINATED LIDDING MATERIAL

Gary G. Borges, 1365 Goodrich Ave. SE., St. Paul, and James H. Rebholz, 3201 Countrywood Dr., Brunsville, both of Minn. 55337

Filed May 19, 1982, Ser. No. 379,618
Int. Cl.³ C08G *18/79*
U.S. Cl. 428—195 **6 Claims**



1. A laminated lidding material comprising,

a co-extruded bottom layer of ethylene methyl acrylate and low density polyethylene resin,

a primer layer of polyurethene, polyethylene imine or a melamine affixed to said polyethylene resin,

a film layer of polyester, nylon, polypropylene or metallic foil affixed to said primed polyethylene resin,

a layer of a low density polyethylene resin affixed to said film layer, and

as a top layer, a metallic foil affixed to said low density polyethylene layer.

4,452,843

SECURITY PAPER

Wittich Kaule, Gauting; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH., Munich, Fed. Rep. of Germany

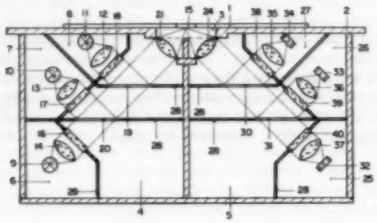
PCT No. PCT/DE81/00078, 371 Date Oct. 23, 1981, 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/03507, PCT Pub. Date Dec. 10, 1981

PCT Filed May 29, 1981, Ser. No. 314,844

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020600; Jun. 13, 1980, 3022329

Int. Cl.[3] **B32B** *23/00, 3/00;* **G01J** *1/00;* **D21H** *5/10*

U.S. Cl. 428—199 **33 Claims**



1. A security document with authenticity features, comprising: a substrate material, a luminescing substance on said carrier material, said luminescing substance comprising a host lattice doped with a rare earth metal, wherein said host lattice absorbs radiation in the visible region and is excited in at least one of the visible and near infrared regions and has an opticaly translucent region in the invisible optical spectrum in which said luminescing substance emits, and wherein the emission lines of the dopant are such that said host lattice absorbs radiation emitted by said dopant at least in the regions of the visible region whereby each emission from said dopant in the visible region is suppressed.

4,452,844

LOW VALUE RESISTOR INKS

Ashok N. Prabhu, Plainsboro, and Kenneth W. Hang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1983, Ser. No. 460,008

Int. Cl.[3] **H05K** *1/03;* **B32B** *3/10*

U.S. Cl. 428—209 **15 Claims**

1. In a resistor ink suitable for forming a resistor film on a circuit board comprising:

(a) from about 30 to about 85 percent by weight of a conductive component comprising stannous oxide and molybdenum trioxide or a mixture of molybdenum trioxide and metallic molybdenum;

(b) from about 10 to about 65 percent by weight of a glass selected from the group consisting of barium aluminum borate glass and barium calcium borosilicate glass; and

(c) from about 5 to about 40 percent by weight of a suitable organic vehicle;

the improvement comprising adding to said ink from about 0.5 to about 10 percent by weight of a temperature coefficient of resistance modifier comprising:

(i) cadmium oxide; or

(ii) ferric oxide, vanadium oxide or mixtures thereof.

7. A circuit board having on a portion of the surface thereof a coating of an improved resistor ink comprising:

(a) from about 30 to about 85 percent by weight of a conductive component comprising stannous oxide and molybdenum trioxide or a mixture of molybdenum trioxide and metallic molybdenum;

(b) from about 10 to about 65 percent by weight of a glass selected from the group consisting of barium aluminum borate glass and barium calcium borosilicate glass;

(c) from about 5 to about 40 percent by weight of a suitable organic vehicle; and

(d) from about 0.5 to about 10 percent by weight of a temperature coefficient of resistance modifier comprising:

(i) cadmium oxide; or

(ii) ferric oxide, vanadium oxide or mixtures thereof.

10. An electronic assembly comprising a circuit board having a circuit thereon, said circuit containing a resistor film formed by applying and firing a resistor ink comprising:

(a) from about 30 to about 85 percent by weight of a conductive component comprising stannous oxide and molybdenum trioxide or a mixture of molybdenum trioxide and metallic molybdenum;

(b) from about 10 to about 65 percent by weight of glass selected from the group consisting of barium aluminum borate glass and barium calcium borosilicate glass;

(c) from about 5 to about 40 percent by weight of a suitable organic vehicle; and

(d) from about 0.5 to about 10 percent by weight of a temperature coefficient of resistance modifier comprising:

(i) cadmium oxide; or

(ii) ferric oxide, vanadium oxide or mixtures thereof.

4,452,845

MOISTURE VAPOR TRANSMITTING FILM OF POLYURETHANE BLENDED WITH AN INCOMPATIBLE POLYMER

Ronald Lloyd, Sawbridgeworth, and Peter J. Metcalfe, Stansted Mountfitchet, both of England, assignors to Smith and Nephew Associated Companies Limited, England

Continuation of Ser. No. 292,214, Aug. 12, 1981, abandoned. This application Jul. 12, 1983, Ser. No. 512,961

Claims priority, application United Kingdom, Aug. 13, 1980, 8026366

Int. Cl.[3] **B32B** *3/26, 27/40*

U.S. Cl. 428—220 **32 Claims**

23. A moisture vapour transmitting elastomeric film from 0.075 mm to 0.125 mm thick which does not contain openings or passages which provide a continuous pathway through the film and is impermeable to liquid water and which comprises a blend of polyurethane and an incompatible polymer in which film the incompatible polymer forms a discrete particulate phase within a continuous matrix of polyurethane and which film contains voids of diameter 2 microns to 12 microns.

4,452,846

FILM FOR PACKAGING LIGHT-SENSITIVE MATERIALS

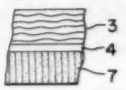
Mutsuo Akao, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 2, 1983, Ser. No. 463,239

Claims priority, application Japan, Feb. 3, 1982, 57-14762

Int. Cl.[3] **B32B** *27/00, 5/16*

U.S. Cl. 428—220 **25 Claims**



1. A film for packaging light-sensitive materials having at least one light-shielding film comprising polyethylene polymer and further comprising 1–30 weight % light shielding material therein, wherein not less than 50 weight % of the total polyethylene polymer is linear low density polyethylene (L-LDPE) which is a copolymer of ethylene and an alpha olefin of 3 to 13 carbon atoms.

2. The film as defined in claim **1**, wherein the total thickness

of the film for packaging light-sensitive materials is 58–130 microns.

4,452,847

SHEET MATERIAL IMPREGNATED WITH A HIGHLY CROSS LINKED THERMALLY STABLE EPOXY COMPOSITION

John T. Siemon, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

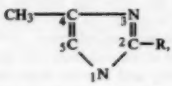
Filed Nov. 17, 1982, Ser. No. 442,479
Int. Cl.³ B32B 7/00
U.S. Cl. 428—246 **6 Claims**

1. A "B"-staged adhesive resin impregnated material comprising glass fabric, the resin comprising:

(A) epoxy resin;

(B) curing agent selected from the group consisting of dicyandiamide, monomethylol dicyandiamide, and mixtures thereof; and

(C) accelerator, co-curing agent consisting of 2-alkyl, 4-methylimidazole having the structural formula:



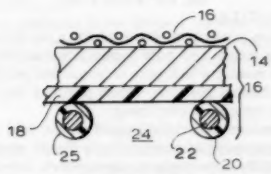
where the alkyl group R contains from 2 to 8 carbon atoms, where the weight ratio of (epoxy): (curing agent): (2-alkyl, 4-methylimidazole) is from about (100): (2.0 to 2.5): (0.5 to 1.0), said impregnated material characterized as having a Tg (DSC) value of over about 150° C. upon complete cure.

4,452,848

COMPOSITE ROOF MEMBRANE

David H. Geiger, Kirby La., Rye, N.Y. 10580

Filed Aug. 29, 1983, Ser. No. 527,322
Int. Cl.³ B32B 7/00
U.S. Cl. 428—247 **20 Claims**



1. A composite roof membrane for use in air supported and tensioned roof structures comprising an interior vapor barrier formed of a scrim reinforced thin film material, an intermediate layer of translucent flexible insulation and an outer layer of liquid impervious but vapor porous fabric.

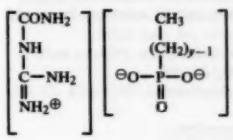
4,452,849

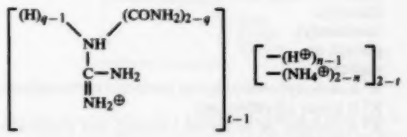
PHOSPHONIC ACID SALTS, THEIR PREPARATION AND THEIR USE FOR FIREPROOFING ORGANIC FIBRE MATERIAL

Hermann Nachbur, Reinach, and Christian Guth, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,880
Claims priority, application Switzerland, Feb. 3, 1981, 700/81
Int. Cl.³ B32B 7/00; B05D 3/02; C07C 1/23
U.S. Cl. 428—264 **12 Claims**

1. A phosphonic acid salt of the formula





in which n, q, t and y are each 1 or 2.

6. A process for fireproofing organic fibers, comprising the step of applying to the fibers an aqueous solution of a phosphonic acid salt of claim 1.

12. Organic fibers bearing thereon a fire retardant finish conferred by the process of claim 6.

4,452,850

ROOFING WEB COATED WITH PLASTICIZED POLYVINYL CHLORIDE ON BOTH SIDES

Gert Even, Höhenstrasse 45; Josef Kern, Friedensberger Strasse 17, and Ernest de Ruiter, Höhenstrasse 57a, all of 5090 Leverkusen 3, Fed. Rep. of Germany

Continuation of Ser. No. 146,828, May 5, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,859
Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918165
Int. Cl.³ B32B 7/00
U.S. Cl. 428—252 **16 Claims**

1. A roofing web comprising a fabric which is coated with plasticized polyvinyl chloride material on both surfaces, the polyvinyl chloride being applied to each surface in multiple passes, the plasticizer of the coating applied to one surface differing from the plasticizer of the coating applied to the other surface, the two plasticizers being immiscible with each other, the fabric being a full tight weave of high tenacity polyester or aramide individual fibers or continuous yarns having a weight of 150 to 300 grams per square meter and a tenacity of at least 200 daN/5 cm.

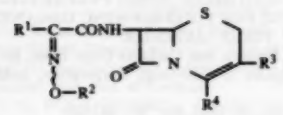
4,452,851

CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka, and Hideaki Yamanaka, Hirakata, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jan. 27, 1982, Ser. No. 343,243
Claims priority, application United Kingdom, Feb. 2, 1981, 8103081; Mar. 20, 1981, 8108884
Int. Cl.³ C07D 501/36; A61K 31/545
U.S. Cl. 424—246 **34 Claims**

1. A cephem compound of the formula:



wherein

R^1 is amino substituted thiazolyl selected from the group consisting of 2-aminothiazol-4-yl, 2-aminothiazol-5-yl, 4-aminothiazol-2-yl, 2-amino-5-halothiazol-4-yl, 2-amino-4-halothiazol-5-yl, and 4-amino-5-halothiazol-2-yl,

protected amino substituted thiazolyl selected from said group,

lower alkylamino substituted thiazolyl,

amino substituted thiadiazolyl,

protected amino substituted thiadiazolyl,

amino substituted pyridyl,

protected amino substituted pyridyl,

furyl,

thiazolyl,

thiadiazolyl,

phenyl, or

naphthyl,

R^2 is carboxy(lower)alkyl or protected carboxy(lower)alkyl,

R^3 is lower alkylthio, and

R^4 is carboxy or protected carboxy, and pharmaceutically acceptable salts thereof.

4,452,852

PROCESS FOR PREPARING POLYFLUORINATED ALCOHOLS

Hubert Blancou, Le Sylvie-Batiment A Rue Paul Rimbaud; Sylvie Benefice, Résidence le Prieuré, 31 bis, avenue St. Lazare, both of Montpellier, France (34000), and Auguste Commeyras, 6 Impasse des Ecoles, Clapiers, France (34960)

Filed Jan. 28, 1983, Ser. No. 461,995

Claims priority, application France, Feb. 23, 1982. 82 02922

Int. Cl.³ C07C *31/38*

U.S. Cl. 568—842 **6 Claims**

1. A process of preparing polyfluorinated alcohols of the formula $R_FCH_2CH_2OH$ where R_F is a perfluoroalkyl radical containing 1 to 20 carbon atoms which comprises reacting $R_FCH_2CH_2I$ where R_F is a perfluoroalkyl radical containing 1 to 20 carbon atoms with a Zn/Cu metallic couple in the presence of a dissociating solvent having a water content of about 0.4 molar or less to obtain an organometallic intermediate compound, and oxidizing the organometallic compound and hydrolyzing the oxidation product to produce the corresponding perfluorinated alcohol.

4,452,853

POLYETHER ESTERS FOR THE CEMENTING OF TEXTILES

Gerhard Schade, Witten, and Peter Uckert, St. Augustin, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Aug. 5, 1982, Ser. No. 405,654

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3132059

Int. Cl.³ C08G *63/66*

U.S. Cl. 528—301 **6 Claims**

1. Polyether ester for the cementing of textiles comprising terephthalic acid, isophthalic acid, 1,4-butanediol and a polyalkylene ether diol, having a melting point of 95° to 125° C. and a relative viscosity, measured at 25° C. on 1 g of polyether ester in 100 ml of a mixture of 60-wt-parts of phenol and 40 wt-parts of 1,1,2,2,-tetrachloroethane, from 1.85 to 2.20, wherein the molar ratio of terephthalic acid to isophthalic acid is 48 to 55:52 to 45 having a content of 10.5 to 25 wt % of polyalkylene ether diol with a molar mass of 0.4 to 6 kg/mol, relative to the weight sum of all the residues contained in the polyether ester.

4,452,854

CATALYST AND PROCESS FOR CARBON MONOXIDE CONVERSION IN SOUR GAS

Jay S. Merriam, LaGrange, and Cecil B. Hogg, Louisville, both of Ky., assignors to United Catalysts, Inc., Louisville, Ky.

Division of Ser. No. 253,941, Apr. 14, 1981, Pat. No. 4,389,335.

This application Jan. 18, 1983, Ser. No. 459,031

Int. Cl.³ C01B *31/20, 3/12*; B01J *23/34*

U.S. Cl. 423—437 **9 Claims**

1. A process for the catalytic conversion of carbon monoxide with steam to form hydrogen and carbon dioxide in the presence of a catalyst, which comprises the step of passing a synthesis gas mixture, comprising carbon monoxide and steam at a temperature of 300°–1000° F., but above the dew point temperature of said synthesis gas mixture, and at a pressure below the dew point pressure of said synthesis gas mixture, but within the range of 1–200 atm, over a catalyst comprising:

A. an aluminous catalyst carrier;

B. catalytically active metal compounds including the oxides and sulfides of cobalt and molybdenum;

C. a promotional amount of an alkali metal compound; and

D. a promotional amount of an oxide or sulfide of manganese.

4,452,855

REINFORCING PROCESS

Gregory I. Brodsky, Wilmington, and Bernard J. Scheve, Heritage Park, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 11, 1983, Ser. No. 465,850

Int. Cl.³ B32B *25/10*

U.S. Cl. 428—290 **7 Claims**

1. In a process for adhering fibrous polymeric aromatic amide reinforcing material to rubber stock by coating the reinforcing material with an adhesive, embedding the coated material into rubber stock and then vulcanizing, the improvement of first treating said fibrous material with an aliphatic sulfonylazide having the formula $R(Cl)_x(SO_2N_3)_y$ where R is an aliphatic or cycloaliphatic hydrocarbon radical containing at least 5 carbon atoms, y is from about 1 to about 4 and x is from 0 to 2y and heating the thus treated fibrous material at a temperature and for a period of time sufficient to decompose substantially all the sulfonylazide groups.

4,452,856

CORROSION PROTECTION PRODUCT, METHOD AND STRUCTURE

Roger Lovell, P.O. Box 760, Palacios, Tex. 77465

Continuation-in-part of Ser. No. 000,587, Jan. 2, 1979, Pat. No. 4,275,111, which is a continuation-in-part of Ser. No. 783,467, Mar. 31, 1977, abandoned. This application Dec. 19, 1980, Ser. No. 218,082

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—312.8 **22 Claims**

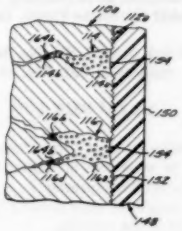
1. Corrosion protection structure for a metal body having outer surface means and pore means comunicating with said outer surface means, which pore means comprises at least some small inner channel portions, which portions may contain air bubbles, said structure comprising:

inner protective material disposed within said pore means, said inner material comprising a liquid medium that is substantially impervious to atmospheric corrosive agents and a suspension of finely divided particulate material in said liquid medium, said outer surface means being substantially free of said inner material, and

outer protective material which is different from said liquid medium and is in solid state that is substantially impervious to atmospheric corrosive agents and to said liquid medium forming a covering over said outer surface means

and said pore means, said covering being intimately bonded to said outer surface means and bridging over said pore means,

said inner material extending across outer portions of said pore means proximate the region where said pore means communicates with said outer surface means, and



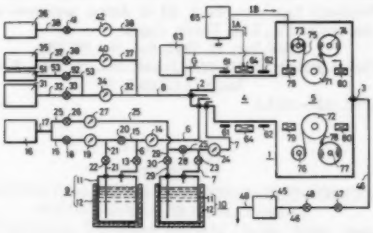
some of said particulate material substantially sealing off small inner channel portions of said pore means so as to stabilize the location of said inner material proximate said region by preventing inward flow of liquid medium into the inner channel portions and providing a barrier to outward movement of any air bubbles that may be entrapped in the inner channel portions.

4,452,857

MAGNETIC MEDIUM

Shunpei Yamazaki, c/o Semiconductor Energy Laboratory Co., Ltd., 21-21 Kitakarasuyama 7-Chome, Setagaya-Ku, Tokyo, Japan

Continuation of Ser. No. 338,870, Jan. 12, 1982, Pat. No. 4,419,380. This application Sep. 22, 1983, Ser. No. 534,706
Claims priority, application Japan, Jan. 12, 1981, 56-2993
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—328 **5 Claims**



1. A magnetic medium comprising:

a base member; and

a magnetic material layer formed thereon and composed principally of amorphous or semi-amorphous particles of a magnetic material selected from a group consisting of Fe, Ni, and Co.

4,452,858

PRODUCTION OF PLATED SHAPED PRODUCT OF POLYAMIDE

Katsuo Take, and Tsutomu Tamura, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Jan. 15, 1982, Ser. No. 339,349
Claims priority, application Japan, Jan. 22, 1981, 56-8730
Int. Cl.³ B32B *5/16, 15/08*
U.S. Cl. 428—331 **7 Claims**

1. A plated shaped article, comprising:

a shaped substrate; and

a metal layer on the surface of the substrate, wherein:

(i) the substrate comprises a polyamide and a filler of powdery wollastonite in an amount of 30 to 60% by weight based on the weight of the substrate; and

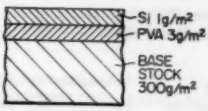
(ii) the adhesive strength of the metal layer is enhanced by the wollastonite filler.

4,452,859

BAKING AND COOKING TRAY SHEET AND ITS MANUFACTURING METHOD

Masayuki Nishijima, Tokorozawa; Morimasa Koizumi, Yokohama, and Minoru Matsuda, Komatsushima, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,303
Claims priority, application Japan, Sep. 2, 1980, 55-120606
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—340 **1 Claim**



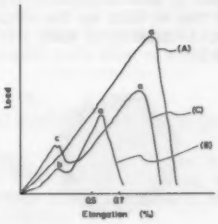
1. A baking and cooking tray sheet comprising a base stock of neutral paper or cardboard weighing 150 to 500 g/m² on the dry basis, a barrier layer provided thereon and consisting essentially of a polyvinl alcohol and/or starch and a water-resisting agent, and a coating layer of silicone [illegible] provided on the barrier layer, the sheet having a water vapor permeability of greater than 100 g/m², 24 hours as measured according to JIS and an air permeability of greater than [illegible] seconds as measured after 10 minute heat treatment at 200° C. [illegible] 20-minute heat treatment at 100° C., according to the [illegible] paper testing method.

4,452,860

CARBON FIBERS AND PROCESS FOR PRODUCING THE SAME

Isamu Obama, and Yoshihisa Yamamoto, both of [illegible] Japan, assignors to Japan Exlan Co., Ltd., Osaka, Japan

Continuation of Ser. No. 199,213, Oct. 21, 1980, abandoned, which is a continuation of Ser. No. 965,244, Nov. 27, 1978, abandoned. This application Jan. 24, 1983, Ser. No. 460,554
Claims priority, application Japan, Dec. 21, 1977, 52-154650
Int. Cl.³ D01C *5/00*; D02G *3/00*
U.S. Cl. 428—367 **2 Claims**



1. A bundle of carbonized filaments, said bundle having a load-elongation curve wherein the greatest load peak is situated in a region above 0.7% elongation and wherein there is no load maximum peak or shoulder-shaped peak resulting from interaction between the filaments appearing in the region below 0.5% elongation, said fiber produced by a process which comprises:

(a) forming a spinning solution of an acrylonitrile polymer containing at least 90 wt % acrylonitrile,
(b) extruding said spinning solution through a spinnerette having a plurality of orifices into air or an inert gas which is a non-coagulating gas for said spinning solution to form a filament bundle,
(c) cold stretching said filament bundle,
(d) water washing said spun filament bundle,
(e) introducing said washed filament bundle into a gel treating bath comprising an aqueous solution containing alkali metal or ammonium ions,
(f) pre-stretching the filament bundle of step (e) in a water bath at a temperature which is more than 10° C. lower than the heat stretching treatment of following step (g) but not lower than 30° C. and at a stretching ratio satisfying formula (2) below,
(g) heat-stretching the filament bundle of step (f) in a water bath having a temperature determined as indicated in step (f) and wherein the coefficient of filament separability of the filament bundle produced by this step is 1.2 to 4.0, said coefficient being determined by the formula (1):

$$\text{Coefficient of filament separability} = \frac{\text{Maximum width of filament bundle during this step}}{\text{Maximum width of filament bundle after this step in a tensioned, fixed state in stationary water}} \quad (1)$$

$$\text{and wherein } 0 < \frac{\log A}{\log A + \log B} \leq 0.6 \quad (2)$$

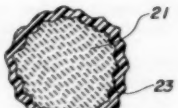
wherein A represents the stretching ratio in step (f) and B represents the stretching ratio in step (g) and
(h) carbonizing the filament bundle of step (g).

4,452,861

SOLID PARTICLES ENCAPSULATED WITH CYANOACRYLATE POLYMER

Fumio Okamoto, Kamukura, and Katsuhiro Kato, Tokyo, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed May 20, 1982, Ser. No. 380,285
Int. Cl.³ B32B *15/08*; B05D *5/06*
U.S. Cl. 428—402.24 **4 Claims**



1. An article of manufacture comprising solid core particles of water-sensitive inorganic phosphor, each particle being separately encapsulated with a film coating consisting essentially of alkyl 2-cyanoacrylate polymer, said film coatings providing said particles with substantial protection from deterioration when they are present in an aqueous slurry.

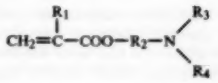
4,452,862

PHARMACEUTICAL COATING MATERIALS SOLUBLE OR SWELLABLE IN GASTRIC JUICE AND PHARMACEUTICAL DOSAGE FORMS COATED THEREWITH

Gerhard Markert, Ober-Ramstadt; Dieter Dreher, Bickenbach; Klaus Lehmann, Rossdorf; Werner Siol, Pfungstadt, and Hubert Rauch, Weiterstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,478
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106449
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—407 **7 Claims**

1. A pharmaceutical dosage form coated with a synthetic polymer, soluble or swellable in gastric juice, prepared by emulsion polymerization comprising
(1) 5–100% by weight of units derived from an aminoalkyl ester monomer of the formula



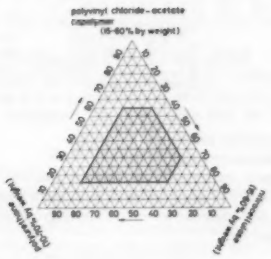
wherein:
R_1=hydrogen or a lower alkyl group,
R_2=2,2-dimethyl propyl or benzyl,
R_3 and R_4=lower alkyl groups or together with the N atom form a penta or hexa atomic heterocyclic ring; and
(2) 0–80% by weight of a copolymerizable monomer selected from the group consisting of esters of acrylic acid and methacrylic acid.

4,452,863

MAGNETIC RECORDING MEDIUM

Masahiro Takizawa, Saku; Yoshio Kawakami, Toubu, and Noribumi Kajimoto, Saku, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,053
Claims priority, application Japan, Jun. 19, 1981, 56-94013
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—423.1 **4 Claims**


polyvinyl chloride–acetate copolymer (5–60% by weight)
polyurethane (when 40–50% by weight)
isocyanate compound (when 10–50% by weight)

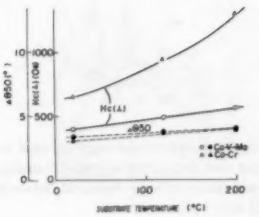
1. A magnetic recording medium comprising a base, a magnetic recording layer formed on one side of said base, and a back coating consisting of a nonmagnetic powder dispersed in a binder and formed on the other side of said base, characterized in that said back coating contains a lubricant selected from the group consisting of a fatty acid and a fatty acid ester, and said binder consists essentially of nitrocellulose, vinyl chloride-vinyl acetate copolymer, polyurethane, and an isocyanate compound.

4,452,864

MAGNETIC RECORDING MEDIUM

Yoshimi Kitahara; Kazumasa Fukuda, and Fumio Maruta, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1982, Ser. No. 418,610
Claims priority, application Japan, Dec. 4, 1981, 56-194400
Int. Cl.³ H01F 1/00
U.S. Cl. 428—611 8 Claims



1. A magnetic recording medium comprising a substrate and a magnetic recording layer formed on the substrate and having an easy magnetization axis in the perpendicular direction to the surface of the medium, characterized in that said magnetic recording layer is composed of from 75 to 90% by weight of Co, the remainder being comprised of both Mo and V but wherein Mo is limited to a maximum of 15 weight percent on the bases of the magnetic layer and unavoidable impurities.

2. A magnetic recording medium comprising a substrate, a high magnetic permeability layer formed on the substrate and a magnetic recording layer formed on the high magnetic permeability layer and having an easy magnetization axis in the perpendicular direction to the surface of the medium, characterized in that said magnetic recording layer is composed of from 75 to 90% by weight of Co, at most 15% by weight of Mo and the rest being V and unavoidable impurities.

4,452,865

PROCESS FOR PRODUCING FIBER-REINFORCED METAL COMPOSITE MATERIAL

Kohji Yamatsuta, Otsu, and Ken-ichi Nishio, Shiga, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 1, 1982, Ser. No. 446,048
Claims priority, application Japan, Dec. 2, 1981, 56-194127; Jul. 26, 1982, 57-130633
Int. Cl.³ C22F 1/04
U.S. Cl. 428—614 16 Claims

1. A process for producing a fiber-reinforced metal composite material which comprises mixing an inorganic fiber with an aluminum alloy at a temperature of not lower than the melting point of said aluminum alloy to form a composite;

removing the composite from a mold at a temperature of not higher than the solid phase line of said aluminum alloy and heating the composite to a temperature of more than the solid phase line and holding the temperature during a definite time; and

quenching the composite to a temperature of 200° C. or lower from a temperature of higher than the solid phase line but lower than the melting temperature.

4,452,866

ALUMINUM-BASED ALLOY BEARING

Soji Kamiya, Aichi, and Takeshi Muraki, Toyota, both of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

PCT No. PCT/JP81/00003, 371 Date Sep. 3, 1981, 102(e) Date Sep. 3, 1981, PCT Pub. No. WO81/02025, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 9, 1981, Ser. No. 302,425
Claims priority, application Japan, Jan. 10, 1980, 55-851; Jan. 10, 1980, 55-852
Int. Cl.³ C22C 21/00, 21/10; F16C 33/12
U.S. Cl. 428—653 34 Claims

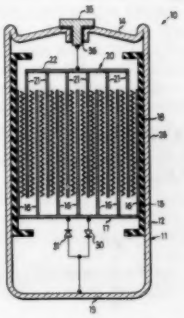
1. A bearing having a bearing layer formed by the steps of casting and then rolling and annealing an aluminum alloy, said alloy comprising 5.0 to 25% by weight of tin, 0.5 to 8% by weight of zinc substantially solid-dissolved in the aluminum matrix and 1 to 7% by weight of at least one element selected from the group consisting of silicon, chromium, manganese, nickel, iron, zirconium, molybdenum, cobalt, tungsten, titanium, antimony, niobium, vanadium, cerium, barium and calcium, with the balance being substantially aluminum.

4,452,867

STORAGE BATTERY CONTAINING VOLTAGE REDUCING MEANS

Frederick J. Conforti, Aurora, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Feb. 28, 1983, Ser. No. 470,315
Int. Cl.³ H01M 2/00
U.S. Cl. 429—7 7 Claims



1. A storage battery comprising a pair of terminals, an anode electrode, a cathode electrode, an electrolyte between and in contact with said electrodes, a pair of oppositely poled semiconductor devices coupled in parallel between one of said electrodes and one of said terminals, the other of said electrodes being coupled to the other of said terminals.

4,452,868

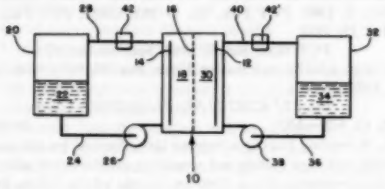
METAL-CHLORINE CELL WITH STORAGE OF CHLORINE

Henry F. Gibbard, Schaumburg; William P. Krug, Hoffman Estates, both of Ill.; Stephen D. Darling, Akron, Ohio, and Mark W. Beranek, Arlington Heights, Ill., assignors to Gould Inc., Rolling Meadows, Ill.

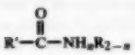
Filed Dec. 29, 1982, Ser. No. 454,282
Int. Cl.³ H01M 12/06, 8/18
U.S. Cl. 429—21 19 Claims

1. An electrochemical cell system comprising at least one positive electrode wherein chlorine is formed during charging of said cell, at least one negative electrode, a separator therebetween dividing said cell into a positive side and a negative side, an aqueous electrolyte contained in said cell, said electrolyte containing a buffer maintaining the pH in a range of from about

1.9 to about 4 and at least one compound selected from the group consisting of:



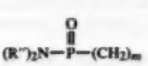
(I)



wherein R is a lower alkyl, n is an integer of 1 or 2, and R' is a member selected from the group consisting of:

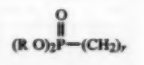
(a) acyl, alkyl or alkoxyl;

(b)



wherein R'' is a lower alkyl and m is an integer of from 0 to 2, and

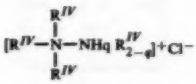
(c)



wherein R'' is a lower alkyl or acyl and r is an integer of from 0 to 2;

(2) $H_2N—SO_3H$;

(3)



wherein the R^{IV} groups are lower alkyls which may be the same or different and q is an integer of 1 or 2 , and

(4) succinimide;

said compound being dissolved in said electrolyte and present in an amount sufficient to react with the chlorine formed and provide a liquid oil.

4,452,869

BATTERY WITH IMPROVED TERMINAL STRUCTURE

Thomas R. DeMoully, Gainesville; Robert E. Rockey, and John J. Strickland, both of Alachua, all of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Nov. 2, 1981, Ser. No. 317,624

Int. Cl.³ H01M *2/20, 6/10*

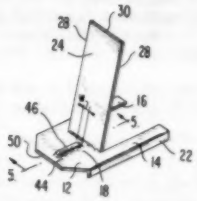
U.S. Cl. 429—94 **11 Claims**

1. An improved terminal tab for use in batteries of the type comprising a container surrounding a spiral wound core having a cylindrical side wall and opposite ends, at which ends electrical connections are made, said tab comprising:

an electrically conductive base portion adapted on one side thereof to be attached to an end of said core;

an elongated tab member extending outwardly from the other side of said base portion, said tab member being adapted to be bent back along said base portion and into contact with said side wall of said core; and

means operatively associated with said base portion and said tab member for minimizing compression by said tab member of the circumferential edge of said end of said core when said core is inserted into said container and the outer end of said tab member is captured between said container and said side wall.



4,452,870

ELECTROCHEMICAL STORAGE CELL

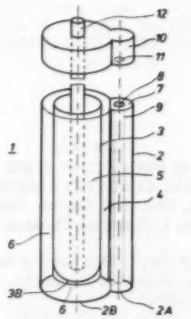
Reinhart Langpape, Schönau-Altneudorf, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie A.G., Mannheim-Käfertal, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 431,612

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1981, 3141697

Int. Cl.³ H01M *10/39*

U.S. Cl. 429—104 **17 Claims**



1. Electrochemical storage cell of the alkali metal and chalcogen type with at least one anode space for the anolyte and a cathode space for the catholyte with the anode and the cathode spaces separated from each other by an alkali ion-conducting solid electrolyte, and with the solid electrolyte surrounded in the region of the anode space by a capillary structure at least over the surface of the electrolyte on the anode side utilized for the electrochemical reaction, the combination therewith of the capillary structure having at least one widened portion with at least one canal through the widened portion, said canal in communication with the capillary structure at least in some regions via at least one opening.

4,452,871

ALKALI METAL CELLS AND BATTERIES AND THE MANUFACTURE THEREOF

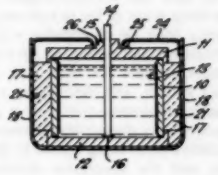
Peter J. Bindin, Runcorn, England, assignor to Chloride Silent Power Ltd., London, England

Filed Jun. 10, 1982, Ser. No. 387,093

Claims priority, application United Kingdom, Jun. 15, 1981, 8118324; Dec. 23, 1981, 8138858

Int. Cl.³ H01M 2/02

U.S. Cl. 429—104 25 Claims



1. A sodium sulphur cell comprising a metal housing, tubular ceramic electrolyte material within said housing separating a first electrode region within the tubular electrolyte from a second electrode region between the electrolyte and the housing, one of said electrode regions containing sodium and the other containing carbon fibre material impregnated with sulphur/sodium polysulphides, and a first current collector extending into the first electrode region but electrically insulated from the electrolyte by an electrically insulating element and wherin the metal housing forming a second collector is sealed to said insulating element in a region around said first current collector, which region has a maximum cross section substantially less than the cross section of the electrolyte tube, and wherein the internal length of electrolyte tube is between 1.5 times and 0.7 times the mean internal diameter of that tube.

4,452,872

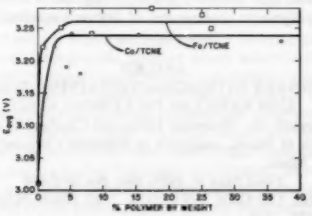
ELECTROCHEMICAL CELL

Keith A. Klinedinst, Marlborough, and Richard A. Gary, Everett, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 1, 1983, Ser. No. 547,595

Int. Cl.³ H01M 4/36

U.S. Cl. 429—105 19 Claims



1. An electrochemical cell comprising

an oxidizable active anode material;

a cathode current collector including a catalytic material for reducing the liquid cathode material comprising a mixture of carbon and a polymer which is the product of the reaction of a transition metal salt with tetracyanoethylene; and

an electrolytic solution, in contact with the anode material and cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute dissolved therein.

4,452,873

POSITIVE ELECTRODE FOR GALVANIC HIGH-TEMPERATURE CELLS AND METHOD OF ITS MANUFACTURE

Heinz-Joachim Voss, Frankfurt, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 49,964, Jun. 19, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,209

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2826955

Int. Cl.³ H01M 4/02

U.S. Cl. 429—209 4 Claims

1. In a positive electrode for use in galvanic high temperature cells having a solid negative electrode comprising a metal selected from the group consisting of Li, Mg, Ca, and Al as the active material thereof, and an electrolyte of molten salt, the improvement which comprises:

said positive electrode comprising a particulate mixture of a heavy metal sulfide comprising a heavy metal selected from the group consisting of iron, cobalt, nickel, copper and molybdenum or a mixture thereof, and a heavy metal selected from the group consisting of iron, cobalt, nickel and copper, sintered to form a rigid framework in which the heavy metal sulfide is embedded and which prevents mass swelling by virtue of its rigidity, said heavy metal consituting from about 20 to about 40% by weight of the electrode.

4,452,874

PHOTOCONDUCTIVE MEMBER WITH MULTIPLE AMORPHOUS SI LAYERS

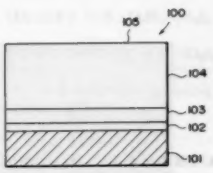
Kyosuke Ogawa, Tokyo; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Teruo Misumi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1983, Ser. No. 463,043

Claims priority, application Japan, Feb. 8, 1982, 57-18416; Feb. 8, 1982, 57-18417; Feb. 8, 1982, 57-18418; Feb. 8, 1982, 57-18419; Feb. 10, 1982, 57-20989; Feb. 12, 1982, 57-21594; Feb. 12, 1982, 57-21595; Feb. 12, 1982, 57-21596; Feb. 12, 1982, 57-21597; Feb. 13, 1982, 57-21716; Feb. 13, 1982, 57-21717; Feb. 15, 1982, 57-22416; Feb. 25, 1982, 57-29731; Feb. 25, 1982, 57-29732; Feb. 25, 1982, 57-29733; Feb. 25, 1982, 57-29734; Feb. 26, 1982, 57-31238; Feb. 26, 1982, 57-31235; Feb. 26, 1982, 57-31236; Feb. 26, 1982, 57-31237; Mar. 1, 1982, 57-31937; Mar. 1, 1982, 57-31938; Mar. 1, 1982, 57-31939; Mar. 1, 1982, 57-31940

Int. Cl.³ G03G 5/082

U.S. Cl. 430—57 9 Claims



1. A photoconductive member comprising a support for photoconductive member, an interface layer comprising an amorphous material represented by any of the formulas:

$$Si_aN_{1-a}(0.57<a<1) \quad (1)$$

$$(Si_bN_{1-b})_cH_{1-c}(0.6<b<1,\ 0.65\leqq c<1) \quad (2)$$

$$(Si_dN_{1-d})_e(X,H)_{1-e}(0.6<d<1,\ 0.8\leqq e<1) \quad (3)$$

(wherein X represents a halogen atom),

a rectifying layer comprising an amorphous material containing atoms (A) belonging to the group III or the group V of the periodic table as constituent atoms in a matrix of silicon atoms, and an amorphous layer exhibiting photoconductivity comprising an amorphous material containing at least one of hydrogen atoms and halogen atoms as constituent atoms in a matrix of silicon atoms.

4,452,875

AMORPHOUS PHOTOCONDUCTIVE MEMBER WITH α-SI INTERLAYERS

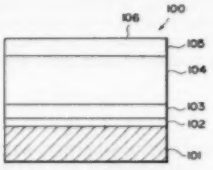
Kyosuke Ogawa, Sakurashin; Shigeru Shirai, Yamato; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Teruo Misumi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 8, 1983, Ser. No. 464,881

Claims priority, application Japan, Feb. 15, 1982, 57-22417; Feb. 15, 1982, 57-22418; Feb. 15, 1982, 57-22419; Mar. 2, 1982, 57-33501; Mar. 2, 1982, 57-33502; Mar. 2, 1982, 57-33503

Int. Cl.³ G03G *5/082, 5/14*

U.S. Cl. 430—57 **13 Claims**



1. A photoconductive member, comprising a support for a photoconductive member, an interface layer comprising an amorphous material containing silicon atoms and nitrogen atoms as constituent atoms, a rectifying layer comprising an amorphous material containing atoms (A) belonging to the group III or the group V of the periodic table as constituent atoms in a matrix of silicon atoms, a first amorphous layer exhibiting photoconductivity and comprising an amorphous material containing at least one member selected from the group consisting of hydrogen atoms and halogen atoms as constituent atoms in a matrix of silicon atoms, and a second amorphous layer containing an amorphous material represented by any of the formulas:

$$Si_aC_{1-a}(0.4<a<1) \quad (1)$$

$$(Si_bC_{1-b})_cH_{1-c}(0.5<b<1,\ 0.6\leqq c<1) \quad (2)$$

$$(Si_dC_{1-d})_eX_{1-e}(0.47<d<1,\ 0.8\leqq e<1) \quad (3)$$

$$(Si_fC_{1-f})_g(H+X)_{1-g}(0.47<f<1,\ 0.8\leqq g<1) \quad (4)$$

wherein X represents a halogen atom.

4,452,876

STEAM, WATER OR HEAT DEVELOPING DIAZOTYPE MATERIAL

Andre Schaeffer, 71 Avenue Albert Ier, 92500 Rueil, and Antoine Wagner, 89 Chemin de Pre-Bron, 73000 Chambery, both of France

Filed May 19, 1981, Ser. No. 265,085

Claims priority, application France, Nov. 28, 1979, 79 29241

Int. Cl.³ G03C *1/60*

U.S. Cl. 430—162 **18 Claims**

1. In a diazotype material developable at 80°–100° C. with humidity, comprising a support carrying a precoat and an overlying layer of:

(a) a light-sensitive two-component diazotype layer containing a light-sensitive diazo compound, a coupling component capable of coupling with said compound to form an azodyestuff and a stabilizing agent, and

(b) a two-component developing system layer coated on the light-sensitive layer or on the backside of the support, one of the components being a heat stable ammonium or amine salt, the other being an alkali or alkaline earth metal salt;

the improvement in which the light-sensitive layer (a) comprises as stabilizing agent a non-migrating acid which is blocked by virtue of its molecular shape and cannot migrate in the developing layer upon storage and a two-component repulsive system preventing the penetration of the developing layer into the light-sensitive layer and lowering the melting point of the developing system,

the developing layer (b) comprising waxes melting during the development and acting as agents to promote said development, binders for each said component of the developing system, and developing accelerators which are inclusion compounds retaining a plasticizer and becoming active only during development,

the light-sensitive layer being coated in the form of an aqueous layer, and the uppermost developing layer being coated in the form of an organic solvent layer.

4,452,877

ELECTROLYSIS TREATMENT OF LIGHT SENSITIVE DIAZO COATED SUPPORTS

Major S. Dhillon, Hillsborough, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Aug. 26, 1982, Ser. No. 412,049

Int. Cl.³ G03C *1/76, 1/54;* **G03F** *7/16*

U.S. Cl. 430—168 **16 Claims**

1. A method for producing a photosensitive printing plate having extended press run life which comprises providing a metal support comprising aluminum or the alloys thereof bearing a light sensitive coating composition comprising a negative working diazo sensitizer on at least one surface of said support and subsequently electrolytically passing a current through the light-sensitive composition via an electrolyte comprising a current carrying ionizing specie while the metal support acts as one electrode wherein the electrolysis of said element is conducted solely after first providing said support with said light sensitive coating, and wherein said electrolysis is conducted solely prior to imagewise light exposure of said element.

13. The method of claim 1 wherein said light-sensitive composition further comprises one or more materials selected from the group consisting of binding resins, colorants, plasticizers, light speed accelerators and photosensitizer stabilizers.

14. The printing plate produced by the method of claim 13 wherein said light sensitive coating composition comprises one or more polymeric condensates of diazonium salts.

4,452,878

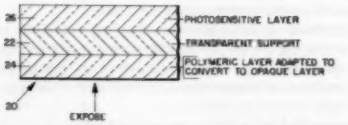
QUATERNARY NITROGEN-CONTAINING POLYMERS AND ARTICLES INCLUDING SAME

Louis Locatell, Jr., Wellesley Hills, and Charles M. Zepp, Berlin, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 9, 1983, Ser. No. 492,696

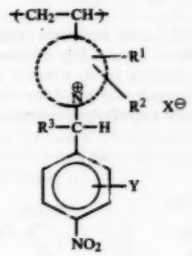
Int. Cl.³ G03C *1/84, 5/54, 1/40;* **C08F** *26/06*

U.S. Cl. 430—215 **24 Claims**



15. A photosensitive article comprising a transparent support having on one side thereof a transparent layer of a quater-

nary nitrogen-containing polymer adapted upon contact with alkali to conversion to a substantially opaque layer, and on the opposed side thereof a photosensitive photographic emulsion system comprising at least one photosensitive layer, said quaternary nitrogen-containing polymer comprising repeating units of the formula



wherein the cyclic quaternary nitrogen-containing moiety is a 2-, 3-, or 4-pyridinium moiety; R^1 and R^2 are independently hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, aralkyl, alkaryl, halo, or R^1 and R^2 together comprise the atoms necessary to complete a six-membered, substituted or unsubstituted benzenoid ring; X is an anion; R^3 is hydrogen or alkyl; and Y is hydrogen, alkyl, substituted alkyl, cycloalkyl, aryl, aralkyl, alkaryl or halo.

22. The photosensitive article of claim 15 wherein said photosensitive system comprises a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, each said emulsion layer being in association, respectively, with a yellow dye developer, a magenta dye developer layer and a cyan dye developer.

23. The photosensitive article of claim 22 including on the side of said support opposed from said layer of quaternary nitrogen-containing polymer, an image-receiving layer.

4,452,879

PREPARATION OF OZONE RESISTANT PRINTING PLATES

Michael G. Fickes, Colts Neck, and Peter F. Warfield, Westfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 13, 1983, Ser. No. 531,992

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—306 **12 Claims**

1. A process for improving the ozone resistance of the surface of relief flexographic printing plates wherein the reliefs are prepared by imagewise exposure with actinic radiation and liquid washout development of the unexposed areas of a layer of a photosensitive elastomeric composition comprising

(1) at least 30% by weight of a block copolymer having (A) at least one solvent-soluble, thermoplastic nonelastomeric block having a glass transition temperature above 25° C. and a number average molecular weight of about 2,000 to 100,000; (B) an elastomeric polymeric mid-block having a glass transition temperature below 10° C. and a number average molecular weight of about 25,000 to 1,000,000; and (C) a polymer block taken from the group of nonelastomeric block (A) and a polymer block having a glass transition temperature in the range of −30° C. to +15° C. prepared by homopolymerization or copolymerization of aliphatic diene hydrocarbon of 4 to 5 carbon atoms or by random copolymerization of at least one aliphatic diene hydrocarbon of 4 or 5 carbon atoms with at least one styrene monomer of the formula $CH_2{=}CRR'$, where R is hydrogen or methyl and R′ is phenyl or C_1 to C_4-alkyl-substituted phenyl;

(2) at least 1% by weight of at least one addition polymerizable ethylenically unsaturated compound containing at least one terminal ethylenic group; and

(3) a polymerization-effective amount of polymerization initiator activatable by actinic radiation,

wherein after drying there is applied to the dry relief surface of the printing plate a solvent solution containing at least 1% by weight of a dithiocarbamate compound taken from the group consisting of nickel dialkyldithiocarbamate and zinc dialkyldithiocarbamate wherein alkyl is from 1 to 4 carbon atoms.

4,452,880

PROCESS FOR DEVELOPING POSITIVE PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE

Minoru Seino; Atsuo Yamazaki; Toru Aoki, and Akihiko Suzuki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP81/00247, 371 Date May 18, 1982, 102(e) Date May 18, 1982, PCT Pub. No. WO82/01086, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 21, 1981, Ser. No. 385,655

Claims priority, application Japan, Sep. 20, 1980, 55-131002

Int. Cl.³ G03F *7/08*; G03C *5/34*

U.S. Cl. 430—309 **9 Claims**

1. A process for developing a positive photosensitive lithographic printing plate comprising imagewise exposing a positive lithographic printing plate comprising a photosensitive layer containing, as a photosensitive constituent, an o-quinonediazide compound provided on an aluminum plate; and developing said imagewise exposed photosensitive lithographic printing plate with a developing solution containing an aqueous solution of an alkali metal silicate, characterized in that the alkali metal of said alkali metal silicate consists of potassium, the molar ratio of SiO_2/K_2O in said developing solution being within the range between 1.60 and 2,00, said developing solution containing K_2O in an amount between 1.8% and 7.2% by weight.

4,452,881

METHOD OF ADJUSTING THE EDGE ANGLE IN POLYSILICON

Wolfgang Augstein, Holzgerlingen; Peter Frasch; Blanka Ivancic, both of Sindelfingen, and Markus A. Zaegel, Kressbach, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1983, Ser. No. 494,755

Claims priority, application European Pat. Off., Jun. 14, 1982, 82 105173.7

Int. Cl.³ G03C *5/00*; B44C *1/22*

U.S. Cl. 430—323 **7 Claims**

1. A method of forming openings in a polysilicon layer which is disposed on a silicon substrate wherein said openings have edge angles that can be adjusted to a preselected level including applying a photoresist layer on said polysilicon layer, forming through photolithographic processes a photoresist mask on said polysilicon layer and etching the exposed portions of said polysilicon layer, characterized by treating said

polysilicon layer with a mixture of 5 parts water, 1 to 3 parts ammonia and 0.25 to 1 part hydrogen peroxide prior to applying said photoresist layer on said polysilicon layer.

4,452,882

SILVER HALIDE PHOTOGRAPHIC MATERIALS AND PROCESS OF DEVELOPING THEM

Yoshitaka Akimura; Eiichi Okutsu; Shigenori Moriuchi; Naomi Saeki; Taiji Hashimura, and Hiroyuki Mifune, all of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 29, 1983, Ser. No. 489,907

Claims priority, application Japan, Apr. 30, 1982, 57-72916

Int. Cl.³ G03C *5/30, 1/06*

U.S. Cl. 430—441 **10 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a silver halide emulsion in which at least 80 mole% of the whole silver halide is composed of silver chloride, the mean grain size thereof is less than 0.4 μm, and which contains more than 1×10^{-6} mole of a water-soluble rhodium salt per mole of silver at an optional period before finishing the first ripening in the production step for the silver halide emulsion, and silver halide photographic light-sensitive material further containing 1×10^{-5} to 1×10^{-2} mole of polyalkylene oxide having a molecular weight of at least 600 or a derivative thereof per mole of silver.

4,452,883

BARRIER RESIN FOR PHOTOTHERMOGRAPHIC COLOR SEPARATION

Robert A. Frenchik, Somerset, Wis., and Kristen A. Hoff, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 17, 1983, Ser. No. 495,468

Int. Cl.³ G03C *1/00, 1/727*

U.S. Cl. 430—502 **17 Claims**

1. A photothermographic color construction having at least two different mono-color-forming layers comprising:

a. a first, spectrally-sensitized, color-forming layer coated out of a solvent system selected from lower alkyl alcohols, aliphatic ketones, aromatic hydrocarbons, or mixtures thereof,

b. an upper, second, different, spectrally-sensitized, color-forming layer coated out of a toluene or acetone solvent system, and

c. a barrier layer comprising a polymer and a color developer coated between said first and second color-forming layers, said polymer being impervious to toluene or acetone, said polymer being an admixture of a first polymer, polyvinylpyrrolidone, and a second polymer which is (i) a neutralized and (ii) a hydrolyzed or lower alkyl-esterified form of a poly(methyl vinyl ether/maleic anhydride) copolymer, in the range of 30 weight percent polyvinylpyrrolidone to 70 weight percent neutralized second polymer to 75 weight percent polyvinylpyrrolidone to 31 weight percent neutralized second polymer; and

wherein each color-forming layer is sensitized to a portion of the spectrum at least 60 nm different from the other color-forming layer, and each color-forming layer contains a silver source, silver halide, and a leuco dye which when oxidized forms a dye having a maximum absorbance at least 60 nm different from that of the dye formed in the other color-forming layer, and the barrier polymer is impervious to the solvent system of any adjacent color-forming layer.

4,452,884

COLOR-PHOTOGRAPHIC RECORDING MATERIAL

David G. Leppard, Rheinfelden, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

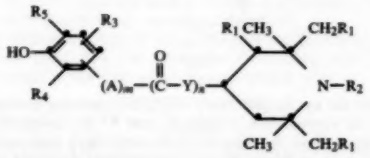
Filed Dec. 17, 1982, Ser. No. 450,513

Claims priority, application Switzerland, Dec. 17, 1981, 8067/81

Int. Cl.³ G03C *7/26*

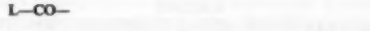
U.S. Cl. 430—551 **9 Claims**

1. A colour-photographic recording material which, in at least one light-sensitive silver halide emulsion layer, an interlayer and/or a protective layer, contains a light stabilising amount of at least one polyalkylpiperidine compound as a light stabiliser, wherein the polyalkylpiperidine compound is of the formula I



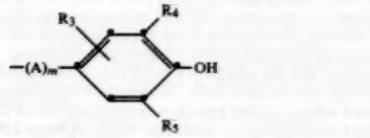
(I)

in which R_1 and R_3 independently of one another are hydrogen or methyl, R_2 is hydroxyl, C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, C_3–C_4-alkynyl, 2-hydroxyethyl, C_2–C_{11}-alkoxyalkyl, C_7–C_{14}-aralkyl or a group of the formula $-(CH_2)_p-CH(R_6)-X_1$ or $-CH(R_6)-X_2$, in which p is one of the numbers 1, 2 or 3, X_1 is halogen, cyano, $-OR_7$, $-OC(O)R_7$, $-OC(O)N(R_7)(R_8)$, $-C(O)OR_7$ or $-C(O)N(R_7)(R_8)$, X_2 is halogen, cyano, 1,2-epoxyethyl, $-C(O)OR_7$ or $-C(O)N(R_7)(R_8)$ and R_6 is hydrogen, methyl or phenyl, R_7 being hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_3–C_{12}-cycloalkyl, phenyl, C_7–C_{14}-alkaryl or C_7–C_{14}-aralkyl and R_8 being hydrogen or C_1–C_4-alkyl, or R_7 and R_8, together with the nitrogen atom to which they are bonded, forming a 5-membered or 6-membered heterocyclic ring, or R_2 is a group of the formula II



(II)

in which L is hydrogen, C_1—C_{12}-alkyl, C_2—C_{12}-alkenyl, C_3–C_4-alkynyl, C_3–C_{12}-cycloalkyl, C_7–C_{14}-alkaryl, C_7–C_{14}-aralkyl, chloromethyl, unsubstituted phenyl, phenyl which is substituted by two C_1–C_4-alkyls and one hydroxyl, or a group $-OR_9$, in which R_9 is C_1–C_{12}-alkyl, cyclohexyl, C_2–C_{12}-alkenyl, benzyl or phenyl, or L is a group of the formula III

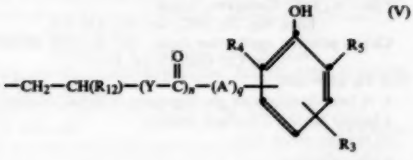


(III)

or R_2 is a group of the formula IV

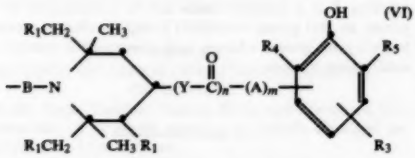
(IV)

in which R_{10} and R_{11} independently of one another are C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, C_3–C_{12}-cycloalkyl, phenyl, C_7–C_{14}-alkaryl or C_7–C_{14}-aralkyl and R_{11} additionally can also be hydrogen, or R_2 is a group of the formula V



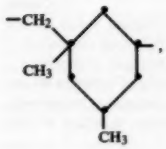
(V)

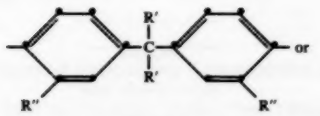
in which A' is methylene or a group $—CH_2—CH(R_{13})—$ and q is zero or 1, and R_{12} and R_{13} independently of one another are hydrogen, methyl, ethyl, phenoxymethyl or phenyl, or R_2 is a group of the formula VI

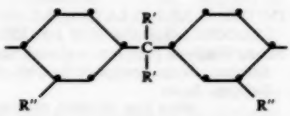


(VI)

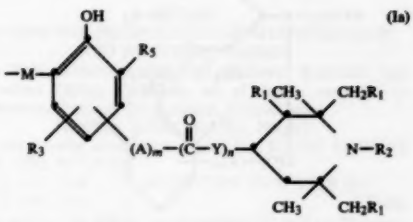
in which B is a group C_rH_{2r}, in which r is a number from 2 to 12, or is C_4–C_8-alkenylene, C_4–C_8-alkynylene, phenylene, xylylene, bitolylene, C_5–C_{12}-cycloalkylene or a group $—CONH—B_1—NHCO—$, in which B_1 is a group C_rH_{2r}, phenylene, naphthylene, tolylene or a group of the formulae





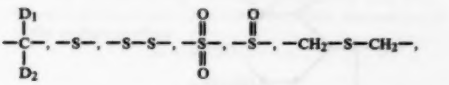


in which R' is hydrogen, methyl or ethyl, R'' is hydrogen or methyl and r is as defined above, or R_2 is one of the groups $—S(O)_zR_{14}$ or $—OR_{15}$, in which z is the number 1 or 2, R_{14} is C_1–C_{12}-alkyl, C_7–C_{14}-alkaryl or phenyl and R_{15} is C_1–C_{12}-alkyl, C_3–C_{12}-alkenyl, C_7–C_{14}-aralkyl or a group of the formula L'—CO—, in which L' is as defined above for L, R_4 and R_5 independently of one another are C_1–C_{12}-alkyl, C_3–C_{12}-cycloalkyl, C_7–C_{14}-aralkyl, C_7–C_{14} alkaryl or phenyl and R_4 can additionally also be hydrogen or a group of the formula Ia



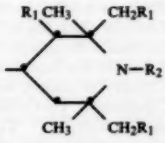
(Ia)

in which R_1, R_2, R_3, R_5, A, Y, m and n are as defined herein and M is a direct bond,



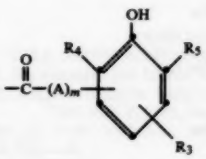
$—CH_2—O—CH_2—$, —O— and $—N(D_3)—$,

and D_1 and D_2 independently of one another are hydrogen, C_1–C_{18}-alkyl, alkyl interrupted by 1 to 3 —S— or phenyl, or D_1 and D_2, together with the C atom linking them, form a 5-membered or 6-membered aliphatic ring and D_3 is hydrogen, C_1–C_{18}-alkyl or phenyl, Y is —O— or $—N(R_{16})—$, in which R_{16} is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_3–C_{12}-cycloalkyl, phenyl, C_7–C_{14}-alkaryl, C_7–C_{14}-aralkyl, C_3–C_{11}-alkoxyalkyl, a group of the formula VII



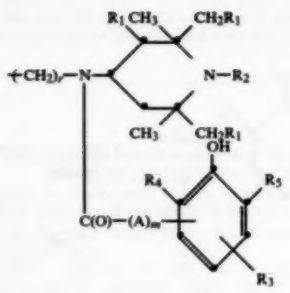
(VII)

or a group —Z—D, in which Z is a $—(CH_2)_s$ group unsubstituted or substituted by a methyl group, s being one of the numbers 2 to 4 and D being hydroxyl, $—OR_7$ or $—N(R_{18})(R_{19})$, in which R_{17} and R_{18} are hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-cycloalkyl or a group of the formula VIII



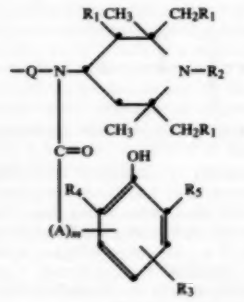
(VIII)

and R_{17} additionally can also be a group of the formula VII, R_{19} is hydrogen, C_1–C_{12}-alkyl, C_3–C_{12}-cycloalkyl or a group of the formula IX



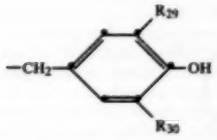
(IX)

or R_{18} and R_{19}, together with the nitrogen atom to which they are bonded, form a 5-membered or 6-membered heterocyclic ring, or R_{16} is a group of the formula IXa



(IXa)

in which Q is as defined above for B, n and m independently of one another are zero or 1, and A is methylene or a group $-CH_2-CH(R_{20})-$ or $-CH_2-C(E)(G)-$, in which R_{20} is hydrogen, methyl, ethyl, phenoxymethyl or phenyl, E is cyano or a group $-C(O)OR_{21}$, $-C(O)R_{22}$, $-SO_2R_{22}$, $-P(O)(OR_{23})_2$, $-C(O)NR_{24}R_{25}$ or $-CHO$, in which R_{21} is C_1–C_4-alkyl, R_{22} is C_1–C_{12}-alkyl, C_7–C_{14}-alkaryl or phenyl, R_{23} is C_1–C_{18}-alkyl, phenyl or allyl, and R_{24} and R_{25} independently of one another are hydrogen, C_1–C_{18}-alkyl or phenyl, and G is hydrogen, C_1–C_{18}-alkyl, C_3–C_{12}-alkenyl, C_3–C_4-alkynyl, C_5–C_{12}-cycloalkyl, C_6–C_{18}-alkylcycloalkyl, C_6–C_{14}-cycloalkylalkyl, C_7–C_{14}-aralkyl, C_7–C_{19}-alkylaralkyl, phenyl, or C_1–C_{18}-alkyl which is substituted by phenoxy, C_7–C_{10}-alkylphenoxy, benzyloxy, cyclohexyloxy, cyano, $-COOR_{26}$, $-OCOR_{27}$ or $-P(O)(OR_{28})_2$, R_{26} being C_1–C_{18}-alkyl or C_3–C_{12}-cycloalkyl, R_{27} being C_1–C_{18}-alkyl, C_3–C_{12}-cycloalkyl, phenyl, C_7–C_{14}-aralkyl or a group of the formula III and R_{28} being C_1–C_{18}-alkyl, allyl or phenyl, or G is C_2–C_{18}-alkyl interrupted by —O—, —S—, —SO— or $-SO_2-$ or a group of the formula



in which R_{29} and R_{30} independently of one another are C_1–C_4-alkyl and R_{30} additionally can also be hydrogen, or, if E is a group $-C(O)R_{22}$, G and R_{22} together are trimethylene or tetramethylene.

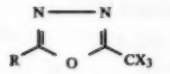
4,452,885

HEAT-DEVELOPABLE PHOTOGRAPHIC MATERIAL

Yasushi Nozawa; Tadayoshi Kokubo; Isamu Itoh, and Hiroshi Kitaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 29, 1982, Ser. No. 428,519
Claims priority, application Japan, Oct. 6, 1981, 56-159265
Int. Cl.[3] G03C 1/34, 1/02
U.S. Cl. 430—614 18 Claims

1. A heat-developable photographic material, comprising:
a binder having dispersed therein:
an organic silver salt;
a photocatalyst;
a reducing agent; and
a compound represented by the general formula:



wherein X is a halogen atoms and R is hydrogen, an alkyl group, an aryl group, an aralkyl group, an alkenyl group or a heterocyclic group, wherein said compound is present in an antifogging amount.

4,452,886

NOVEL PHOTON ABSORBING OR EMITTING POLYMERS AND THEIR USE AS REAGENTS IN IMMUNOASSAY SYSTEMS

Robert P. Henry, 15 Longjumeau St., Ballainvilliers 91160, France

Filed Sep. 21, 1981, Ser. No. 303,995
Int. Cl.[3] G01N 33/54; C12N 9/96
U.S. Cl. 435—7 57 Claims

1. A reagent for the detection in biological fluids of one member of a binding pair selected from the group consisting of a ligand and a receptor in a buffered medium comprising a water-soluble polymer consisting essentially of between 40 and 600 chromophoric or fluorescent group containing monomers, a plurality of said monomers being bound to either of said members through a functional group.

4,452,887

INTEGRAL MULTI-LAYERED ELEMENT CONTAINING GLUCOSE OXIDASE FOR DETERMINING GLUCOSE

Masao Kitajima; Fuminori Arai, and Harumi Katsuyama, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Saitama, Japan

Filed Jun. 17, 1982, Ser. No. 389,344
Claims priority, application Japan, Jun. 17, 1981, 56-93631
Int. Cl.[3] G01N 33/66
U.S. Cl. 435—14 4 Claims

1. An integral multi-layered element for determining glucose in a liquid sample comprising a water-impermeable light-transmissive support having formed thereon, in sequence, a reagent layer containing a reactive component forming a detectable material by the action of hydrogen peroxide, a non-porous light-shielding layer and a porous spreading layer, wherein a glucose oxidase is incorporated in at least one layer disposed above said reagent layer.

4,452,888

PROCESS FOR PRODUCING A LOW-MOLECULAR WEIGHT PEPTIDE COMPOSITION AND NUTRIENT AGENT CONTAINING THE SAME

Ken-ichi Yamazaki, Kawagoe; Shoji Takao, Higashikurume, and Hiroshi Hara, Fuchu, all of Japan, assignors to Terumo Corporation, Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,254

Claims priority, application Japan, Jul. 10, 1980, 55-94168; Jul. 10, 1980, 55-94169

Int. Cl.³ C12P *21/06;* A23J *1/00;* A23L *1/20, 1/31*

U.S. Cl. 435—69 11 Claims

1. A process for producing a low-molecular weight peptide composition comprising dispersing a protein raw material in water at a concentration of from 5 to 20 w/v%, adding an acid to the dispersion in an amount sufficient to adjust the pH of the dispersion to between 1 and 4, adding at least two different acid preteases to the pH adjusted dispersion simultaneously or sequentially, and permitting anzymatic proteolysis to take place for 8 to 72 hours at a temperature of from 25° to 60° C., thereby producing a low-molecular weight peptide composition containing primarily dipeptides and tripeptides while suppressing the formation of free amino acids.

4,452,889

METHOD OF PRODUCING INOSINE AND/OR GUANOSINE

Koji Sonoi, Suita; Yasuhiro Sumino, Kobe, and Muneharu Doi, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 17, 1982, Ser. No. 389,459

Claims priority, application Japan, Jun. 22, 1981, 56-97310

Int. Cl.³ C12N *1/00;* C12P *19/40;* C12R *1/07, 1/125, 1/13, 1/15*

U.S. Cl. 435—88 5 Claims

1. A method of producing inosine and/or guanosine comprising cultivating an inosine and/or guanosine-producing strain of microorganism in a medium containing a carbohydrate as a carbon source to cause the microorganism to elaborate and accumulate inosine and/or guanosine in the resulting fermentation broth, and harvesting the inosine and/or guanosine from the broth, wherein the carbohydrate concentration in the medium at the initiation of cultivation is not more than 1 percent or is more than 1 percent, and when it is more than 1 percent cultivation is carried out until the concentration is decreased to not more than 1 percent; a carbohydrate is added continuously or intermittently to the medium when the concentration of the carbohydrate in the medium is not more than about 1 percent; and the carbohydrate concentration of the medium is maintained at not more than about 1 percent after said addition.

4,452,890

METHOD OF PRODUCING L-THREONINE BY FERMENTATION

Takayasu Tsuchida, Yokohama; Kiyoshi Miwa, Matsudo, and Shigeru Nakamori, Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,396

Claims priority, application Japan, May 11, 1981, 56-70383

Int. Cl.³ C12P *13/08;* C12N *15/00*

U.S. Cl. 435—115 10 Claims

1. A method for producing L-threonine by fermentation which comprises aerobically culturing in an aqueous culture medium an L-threonine producing microorganism obtained by isolating a strain transformed to become resistant to α-amino-β-hydroxy-valeric acid after incorporation into a recipient strain of the genus Brevibacterium or Corynebacterium which is sensitive to α-amino-β-hydroxy valeric acid, of a plasmid DNA obtained from a microorganism of the genus Brevibacterium or Corynebacterium and having been inserted therein a restriction endonuclease fragment of chromosomal DNA controlling α-amino-β-hydroxy valeric acid resistance derived from a DNA-donor strain of the genus Brevibacterium or Corynebacterium which is resistant to α-amino-β-hydroxy valeric acid, and recovering L-threonine accumulated in the resulted culture liquid.

4,452,891

METHOD FOR PRODUCTION OF MYCOPHENOLIC ACID BY FERMENTATION

Takao Kida, Yokosuka; Takehiko Ishikawa, Kawasaki, and Hiroshiro Shibai, Chigasaki, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,041

Claims priority, application Japan, Sep. 8, 1980, 55-124380; Sep. 8, 1980, 55-124381

Int. Cl.³ C12P *17/04, 17/02;* C12N *15/00;* C12R *1/81*

U.S. Cl. 435—126 1 Claim

1. A method for producing mycophenolic acid by fermentation, which comprises:

(1) aerobically culturing in a culture medium under conditions suitable for the accumulation of said mycophenolic acid, a strain of Penicillium identified as *Penicillium brevicompactum* FERM BP-53, *Penicillium brevicompactum* FERM-BP-54, or *Penicillium brevicompactum* BP-55 which is capable of producing mycophenolic acid; and

(2) recovering the mycophenolic acid which accumulates in the culture medium.

4,452,892

IMMOBILIZATION OF BIOLOGICALLY ACTIVE MATERIAL IN A HYDROGEL ON A SUPPORT

Alan Rosevear, Uffington, England, assignor to United Kingdom Atomic Energy Authority, Great Britain

Filed Sep. 3, 1981, Ser. No. 299,862

Claims priority, application United Kingdom, Sep. 11, 1980, 8029343

Int. Cl.³ C12N *11/14, 11/10, 11/12, 11/04*

U.S. Cl. 435—176 7 Claims

1. A method for the preparation of a composite material containing an immobilized biologically active species which comprises applying a gel precursor containing a particulate biologically active material to a support material, said gel precursor containing a major amount of a gel forming material selected from the group of monomers consisting of acrylic, acrylate and biacrylate monomers in combination with a minor amount effective to enhance viscosity of a viscosity enhancing agent selected form the group consisting of an aqueous solution or hydrocolloid suspension of xanthan gum, sodium alginate, carboxymethyl cellulose-sodium salt, cellulose ethers, polyvinyl alcohol, agarose, cold water soluble starch, cellulose paste, or carrageenam and gelling the gel precursor by addition and/or condensation radical initiation polymerization to form a hydrogel containing said biologically active material on the support material, the forming of the hydrogel on the support material being such that, after gelling, at least some of the hydro-gel is enmeshed with the support material, and the gel precursor having rheological properties selected (i) to facilitate applying of the gel precursor to the support material and (ii) to facilitate retention of the gel precursor on the support material prior to and during the gelling and/or to inhibit the sedimentation of biologically active materials prior to, and during gelling.

4,452,893

CELL GROWTH MEDIUM SUPPLEMENT

Paul K. Ng, Hercules, and Milton B. Dobkin, Lafayette, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Aug. 3, 1981, Ser. No. 289,541

Int. Cl.³ C12N *5/00, 5/02;* A61K *35/16;* A01N *1/00*

U.S. Cl. 435—240 7 Claims

1. In a medium for the growth of mammalian cells containing nutrients and protein supplement, the improvement wherein the protein supplement consists entirely of human proteins and comprises Cohn Fraction IV treated to be sub-

stantially free of components within the molecular weight range 2.5×10^5–1.0×10^{10}.

4,452,894

PSEUDOMONAS COMPOSITIONS

Ronald H. Olsen, Ann Arbor, Mich., and Peter A. Vandenbergh, Sarasota, Fla., assignors to Microlife Genetics, Inc., Sarasota, Fla.

Filed Oct. 9, 1981, Ser. No. 310,090
Int. Cl.³ C12N *1/20, 15/00*; C10G *32/00*
U.S. Cl. 435—253 **19 Claims**

1. A biologically pure culture of a bacterium of the genus Pseudomonas in a containing genetic material which promotes utilization of a wide variety of halogenated hydrocarbons as sole carbon sources and wherein the strain grows faster in the presence of o-, m- or p-chlorotoluene than toluene as a sole carbon source, the genetic material being isolatable from a strain of *Pseudomonas putida* or *Pseudomonas* sp. NRRL-B-12,538 or NRRL-B-12,539 in contact for extended periods of time with halogenated aromatic compounds first by growth in a minimal medium including L-tryptophan as a sole carbon source and then growth in a second minimal medium in the presence of a halogenated aromatic compound as a second sole carbon source and wherein growth of the bacterium is determined using a minimal medium agar plate in the presence of vapors of toluene or o-, m- or p-chlorotoluene as a sole carbon source at 25° to 30° C.

4,452,895

NON-LACTOSE FERMENTING *PEDIOCOCCUS PENTOSACEUS*

Carlos F. Gonzalez, Sarasota, Fla., assignor to Microlife Genetics, Sarasota, Fla.

Filed Mar. 17, 1982, Ser. No. 359,080
Int. Cl.³ C12N *1/20, 15/00*; C12P *7/56*; C12R *1/01*
U.S. Cl. 435—253 **18 Claims**

1. A storage stable biologically pure culture of *Pediococcus pentosaceus* adapted for food fermentations and containing a naturally occurring plasmid and which strain is unable to ferment lactose to lactic acid as a result of mutagenic modification of genetic material controlling lactose fermentation in a known strain of *Pediococcus pentosaceus* also containing the plasmid and which strain is able to ferment dextrose to lactic acid in a food.

4,452,896

CULTURE MEDIUM AND CONDITIONS FOR GROWTH OF MAGNETIC BACTERIA

Richard P. Blakemore, 4 Davis Ave., Durham, N.H. 03824, and Ralph S. Wolfe, 1208 W. Healey, Champaign, Ill. 61820

Continuation of Ser. No. 202,160, Oct. 30, 1980, Pat. No. 4,394,451. This application Apr. 22, 1983, Ser. No. 487,852
Int. Cl.³ C12N *1/22*; C12P *3/00*; C12R *1/01*
U.S. Cl. 435—253 **5 Claims**

1. A method for growing a biologically pure culture of magnetic bacteria, comprising mixing, per 100 ml, about 2–30 μM of ferric quinate, about 10–1000 mg. of an organic compound selected from the group consisting of fumaric acid, tartaric acid, malic acid, succinic acid, lactic acid, pyruvic acid, oxaloacetic acid, malonic acid, β-hydroxybutyric acid, maleic acid, galactose, rhamnose, melibiose, acetic acid, adipic acid, and glutaric acid, a vitamin source, a mineral source, a nitrogen source, an acetate source, and a pH buffer within the range of about 5.2–7.5, inoculating the mixture with said magnetic bacteria, providing said magnetic bacteria with an atmosphere having an initial oxygen concentration of about 0.2–6% by volume, and maintaining the ambient temperature in the range of about 18°–35° C.

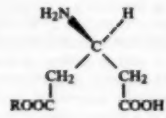
4,452,897

METHOD OF PREPARING OPTICALLY ACTIVE β-(S)-AMINOGLUTARIC ACID MONOALKYL ESTERS

Hamao Umezawa, Tokyo; Masaji Ohno, Kamakura; Hirokazu Kotani; Toshinori Miyabe, both of Muko; Akira Obayashi, and Osamu Tanabe, both of Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

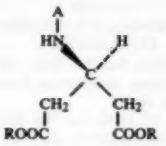
Filed Jun. 14, 1982, Ser. No. 388,475
Int. Cl.³ C07B *20/00*; C12R *1/20*
U.S. Cl. 435—280 **4 Claims**

1. A process for preparing an optically active β-(S)-aminoglutaric acid monoalkyl ester of the formula:



(I)

wherein R is a lower alkyl group having 1 to 4 carbon atoms, which comprises subjecting a β-N-protected aminoglutaric acid dialkyl ester of the formula:



(II)

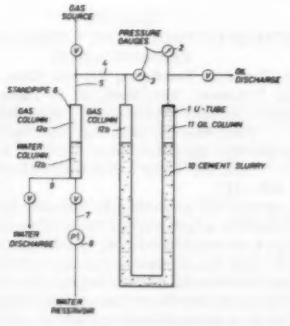
wherein each R is as defined above and A is an easily removable protecting group, to hydrolysis by an enzyme produced by Flavobacterium lutescens IFO 3084 (FERM P-6063) or Gluconobacter dioxyacetonicus IFO 3271 (FERM P-6067) to selectively hydrolyze only one of the two ester groups, removing the protecting group, and then recovering said monoalkyl ester.

4,452,898

PROCESS FOR MEASURING THE VOLUME CHANGE OF A NITROGEN-GAS-STABILIZED CEMENT

Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 227,027, Jan. 21, 1981, Pat. No. 4,333,764. This application Nov. 10, 1981, Ser. No. 319,847
Int. Cl.³ G01N *7/00, 7/18, 33/38*
U.S. Cl. 436—2 **6 Claims**



1. A process for measuring properties of a cement slurry during the setting of the cement at a selected pressure and temperature comprising:

positioning a sample of the slurry so that it fills a transverse

section of a rigid-walled, generally tubular portion of a test chamber;

positioning and pressurizing a body of inert gas so that it presses against one surface of the slurry sample within the test chamber while gas is being pumped into or back-flowed out of that body of gas to the extent required to maintain the selected pressure;

allowing the slurry to form a set cement within the test chamber while maintaining the slurry sample at the selected temperature in contact with the pressurized inert gas at the selected pressure; and,

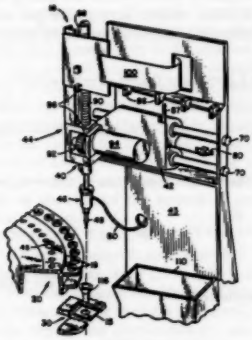
measuring the volume at the pressure maintained on said inert gas of any inert gas which flows into or any inert and/or internally generated gas which flows out of the space initially occupied by the cement slurry.

4,452,899

METHOD FOR METERING BIOLOGICAL FLUIDS

Wilton D. Alston, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1982, Ser. No. 387,125
Int. Cl.³ G01N *1/14, 35/06*
U.S. Cl. 436—46 **10 Claims**



1. A process for the precise dispensing of a biological fluid from a metering tip onto a generally planar analysis slide, said process comprising the steps of:

introducing a quantity of fluid into said tip, said tip having an air space above the fluid;

moving the tip toward a metering position in which the tip is spaced between about 0.030 cm and about 0.15 cm from an analysis slide;

creating a partial vacuum on the fluid in the tip when the tip is at a point spaced from the metering position in an amount effective to prevent pre-spotting when the tip is moved into the metering position;

moving the tip into the metering position at a velocity that would cause pre-spotting in the absence of the partial vacuum;

pressurizing the air and fluid in the tip for a preselected period to force a selected volume of fluid onto the slide at a predetermined dispense rate; and

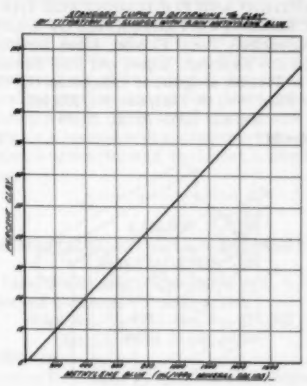
maintaining said tip briefly in the metering position after said period and then withdrawing the tip from said metering position.

4,452,900

METHOD FOR DETERMINING CLAY CONTENT IN TAILINGS AND SLUDGE

Raymond N. Yong, and Amar J. Sethi, both of Beaconsfield, Canada, assignors to Suncor, Inc., Toronto, Canada

Filed Oct. 19, 1981, Ser. No. 312,606
Claims priority, application Canada, Nov. 21, 1980, 365173
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.³ G01N *33/24, 31/16*
U.S. Cl. 436—72 **5 Claims**



1. A method for estimating the content of clay or clay minerals in a material comprised of tar sands bitumen, or tailings or sludge therefrom which comprises

(a) preparing an empirical curve relating deaired density of said material to percent mineral solids of raw material

(b) titrating acidified samples of said material containing a known amount of mineral solids as determined by the curve prepared in step (a) with methylene blue to an end point showing no further absorption of said methylene blue and

(c) comparing the amount of methylene blue absorbed per unit of mineral solids with an empirical curve relating said amount of methylene blue to clay or clay mineral content.

4,452,901

ELECTROPHORETICALLY TRANSFERRING ELECTROPHEROGRAMS TO NITROCELLULOSE SHEETS FOR IMMUNO-ASSAYS

Julian Gordon; Theophil Staehelin, both of Arlesheim, and Harry Towbin, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

PCT No. PCT/EP80/00018, 371 Date Apr. 20, 1981, 102(e) Date Apr. 20, 1981, PCT Pub. No. WO81/02790, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 18, 1980, Ser. No. 261,217
Claims priority, application Canada, Mar. 20, 1980, 348033
Int. Cl.³ G01N *33/54, 33/68, 27/26*
U.S. Cl. 436—506 **42 Claims**

1. A solid support for proteins consisting of a porous nitrocellulose sheet containing a replica of an electropherogram of proteins in a gel wherein the replica is obtained by electrophoretic transfer of said electropherogram from the gel.

19. A process for obtaining a solid support for protein consisting of a porous nitrocellulose sheet containing a replica of an electropherogram of proteins in a gel, comprising transferring the electropherogram from the gel to the nitrocellulose sheet by electrophoresis.

30. An immunoassay for the identification or detection of proteins or their respective antibodies comprising:

separating the proteins by electrophoresis in a gel,

electrophoretically transferring the electropherogram to a porous nitrocellulose sheet, and

contacting the nitrocellulose sheet with an antiserum containing known antibodies; or

contacting a serum containing said respective antibodies with a porous nitrocellulose sheet containing a replica of an electropherogram of known proteins in a gel wherein the replica is obtained by electrophoretic transfer of said electropherogram from the gel.

4,452,902

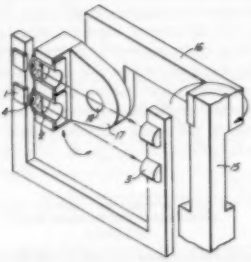
METHOD AND EQUIPMENT FOR THE MEASUREMENT OF PROPERTIES OF A LIQUID

Osmo A. Suovaniemi; Pertti Ekholm; Johan Järnefelt, all of Helsinki; Esko Kaukanen, Espoo, and Paul Partanen, Helsinki, all of Finland, assignors to Labsystems Oy, Finland

Filed Nov. 19, 1981, Ser. No. 323,102

Int. Cl.³ G01N *21/82, 33/54*

U.S. Cl. 436—517 15 Claims



1. A method for the measurement of properties of any precipitated reaction product which might be contained within a solution to be tested and which appears on the bottom of a vessel while said vessel is revolving on a centrifuge comprising:

placing a vessel which contains said solution on a centrifuge;

rotating said centrifuge so that said vessel is pivoted to a substantially horizontal position by the action of centrifugal force and matter suspended in said solution is caused to precipitate;

passing a substantially horizontal beam of radiation along a longitudinal axis of said vessel which beam passes through a field of limited area out of the bottom of said vessel, said vessel intersecting said beam on its path about said centrifuge;

detecting said beam of radiation at different points of said vessel bottom as said beam passes through said vessel on repeated rotations over time;

reading the intensity of said detected radiation to obtain a measurement at each particular time; and

processing said measurements to determine the properties of any precipitate present in said solution as well as any change in said properties as a function of time.

4,452,903

ASSAY METHOD AND REAGENT KIT MEANS FOR LIPID-CONTAINING BODY FLUID

Jin P. Lee, 1396 Trevino Dr., Troy, Mich. 48098, and Ching Sui A. Yi, 28071 Everett, Southfield, Mich. 48076

Filed Feb. 17, 1981, Ser. No. 235,206

Int. Cl.³ G01N *33/56, 33/58, 33/60;* B65D *71/00*

U.S. Cl. 436—540 18 Claims

1. A storage-stable reagent kit for assay of a selected hapten in an aliquot of body fluid containing lipid, comprising a first container containing a tracer in liquid form including a non-lipid conjugate of said hapten, containers separate from said first container respectively containing first and second competitive binding proteins for immunospecific mutual binding with said hapten and conjugate, and surfactant in said liquid tracer for constituting in an incubation mixture with the aliquot in a quantity sufficient for solubilizing the mixture.

7. A method for assay of a selected hapten in an aliquot of body fluid containing lipid employing a reagent kit according to claim 1, which comprises constituting the aliquot in a mixture comprising said surfactant and incubating the mixture, the quantity of surfactant being sufficient to solubilize the mixture.

4,452,904

BREAST CYST FLUID PROTEIN ASSAY

Darrow E. Haagensen, Jr., Newtonville, Mass., assignor to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 102,070, Dec. 10, 1979, abandoned, Division of Ser. No. 880,257, Feb. 22, 1978, Pat. No. 4,229,426. This application Aug. 13, 1981, Ser. No. 292,382

Int. Cl.³ C07C *103/52, 7/00;* G01N *33/58, 33/60*

U.S. Cl. 436—545 6 Claims

1. Gross-cystic disease fluid protein-15 (GDCFP-15) essentially free of other components found in human breast gross cystic disease fluid and being further characterized as follows:

(a) a glycoprotein having a calculated monomer size of about 15,000 daltons as determined by sodium dodecyl sulfate acrylamide gel analysis; and

(b) immunologically not identical to any components of plasma as determined by Ouchterlony analysis; and

(c) immunological cross identity with a component of human milk and human saliva; and

(d) cleavage with cyanogen bromide provides two peptides one of which is blocked, and one of the peptides has a molecular weight of about 12,500 daltons as determined by sodium dodecyl sulfate acrylamide gel analysis and having the following partial sequence of amino acids:

H_2N—Val—Val—Lys—Thr—Tyr—Leu—Ile—Ser—

10

—Ser—Ile—Pro—Leu Gln—Gly—Ala—Phe—Asn—Tyr—

20

—Lys—Tyr—Thr—Ala—(Cys)—Leu—(Cys)—Asp—Asp—

30

—Asn—Pro—Lys—Thr—Phe—Tyr—Trp—Asp—Phe—

39

—Tyr—Thr—(Gln)—

( ) indicate possible derivitization

4,452,905

AQUEOUS PREPARATION AND ITS USE FOR THE PREPARATION OF CERAMIC MASSES

Franz Drinkuth, Odenthal; Wulf von Bonin, Leverkusen; Dietmar Schüpel, Cologne, and Artur Lorenz, Konstanz-Litzelstetten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,733

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1981, 3151373

Int. Cl.³ C04B *21/06*

U.S. Cl. 501—81 3 Claims

1. Aqueous preparations of a gel-like consistency, containing

(A) 1–15% by weight of hydrophilic polyurethanes,

(B) optionally up to 3% by weight of hydrophilic polymers which are water-soluble or capable of swelling in water, based on unsaturated monomers and/or modified cellulose derivatives,

(C) optionally up to 2% by weight of surface active agents,

(D) optionally up to 30% by weight of powder, and

(E) 0.3–30% by weight of oil.

4,452,906

CERAMIC COMPOSITION

Stephen J. Burden, 3867 Root Dr., Troy, Mich. 48084

Division of Ser. No. 267,043, May 26, 1981, Pat. No. 4,396,724. This application Feb. 3, 1983, Ser. No. 463,416

Int. Cl.³ C04B 35/10, 35/56

U.S. Cl. 501—87 5 Claims

1. In a ceramic composition comprising an essentially homogeneous admixture of sintered powders of an aluminum oxide base refractory material, the improvement wherein said composition additionally contains hafnium oxide and tungsten carbide in an amount sufficient to enhance wear resistance while permitting said powder to undergo pressureless sintering.

4,452,907

PROCESS FOR THE PRODUCTION OF CRYSTALLINE ALUMINOSILICATES AND THEIR USE AS CATALYSTS AND CATALYST SUPPORTS

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 212,807, Dec. 4, 1980, abandoned. This application Dec. 28, 1982, Ser. No. 454,046

Claims priority, application United Kingdom, Dec. 7, 1979, 7942350

Int. Cl.³ C01B 33/28; B01J 29/06

U.S. Cl. 502—60 15 Claims

1. A process for the production of a crystalline aluminosilicate having a silicon to alumina molar ratio greater than 12:1 by mixing a source of silica, a source of alumina, a source of alkali metal, water and an inorganic source of ammonium ions, maintaining the mixture at elevated temperature for a period such that crystallisation occurs characterized in that the source of ammonium ions is employed in the absence of an alcohol or any "seed", i.e., a small portion of the crystalline aluminosilicate desired, or alkylene oxide and the source of silica, the source of alumina, the source of alkali metal, water and the source of ammonium ions are mixed in the molar proportions (expressed in the case of the silica and alumina sources in terms of the equivalent moles of the oxide, in the case of the alkali metal source in terms of the equivalent moles of the hydroxide (MOH) and in the case of the source of ammonium ions in terms of free ammonia):

$SiO_2:Al_2O_3$ greater than 12:1

$MOH:Al_2O_3$ in the range from 1:1 to 20:1

$SiO_2:NH_3$ in the range from 1:1 to 200:1, and

$H_2O:MOH$ in the range from 30:1 to 300:1.

11. A process according to claim 1 wherein, there is incorporated into the crystalline aluminosilicate one or more of the metals copper, silver, zinc, gallium, indium, thallium, lead, antimony, bismuth, iron, cobalt, nickel, ruthenium, rhodium, palladium, iridium and platinum.

4,452,908

PROCESS FOR THE PRODUCTION OF CATALYSTS BASED ON CRYSTALLINE ALUMINOSILICATES

William J. Ball, Capel, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Jul. 8, 1982, Ser. No. 396,361

Claims priority, application United Kingdom, Jul. 23, 1981, 8122768; Aug. 1, 1981, 8123619

Int. Cl.³ B01J 29/04, 29/06

U.S. Cl. 502—61 14 Claims

1. A process for the production of a catalyst based on a crystalline aluminosilicate having a silica to alumina molar ratio greater than 12:1 which crystalline aluminosilicate is obtained by mixing a source of silica, a source of alumina, a source of alkali metal, water and a source of ammonium ions in the absence of an alcohol or an alkylene oxide in the molar proportions (expressed in the case of the silica and alumina sources in terms of the equivalent moles of the oxide, in the case of the alkali metal source in terms of the equivalent moles of the hydroxide [MOH] and in the case of the source of ammonium ions in terms of free ammonia):

$SiO_2:Al_2O_3$ greater than 12:1

$MOH:Al_2O_3$ in the range from 1:1 to 20:1

$SiO_2:NH_3$ in the range from 1:1 to 200:1, and

$H_2O:MOH$ in the range from 30:1 to 300:1,

maintaining the mixture at elevated temperature for a period such that crystallisation occurs, recovering the crystalline aluminosilicate so-formed, cation-exchanging the recovered crystalline aluminosilicate with either gallium or aluminum cations and/or impregnating the recovered crystalline aluminosilicate with a solution of a gallium or aluminum compound and finally calcining the exchanged and/or impregnated crystalline aluminosilicate characterised in that either the recovered crystalline aluminosilicate or the cation-exchanged crystalline aluminosilicate or the metal impregnated crystalline aluminosilicate is washed with a solution containing either an organic base, a carboxylic acid, an alcohol, a glycol, a phenol or an ester.

4,452,909

PROCESS FOR COATING CRYSTALLINE SILICA POLYMORPHS

Duck J. Yang, Wallingford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 13, 1982, Ser. No. 417,683

Int. Cl.³ B01J 21/08, 29/06

U.S. Cl. 502—69 7 Claims

1. A process for coating a crystalline silica polymorph with essentially amorphous silica which comprises contacting the silica having the external part of at least a portion of the channels in the crystalline silica polymorph occupied with a blocking compound with an aqueous solution of an alkali metal silicate for a period of about 5 minutes to about 1¼ hours while maintaining the pH of the solution in the range 7.5–11.5.

3. The process of claim 1 wherein the silica is a zeolite.

4,452,910

CHROMIUM EXPANDED SMECTITE CLAY

P. Donald Hopkins, St. Charles; Bernard L. Meyers, Wheaton, and Donna M. Van Duch, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 15, 1982, Ser. No. 388,697

Int. Cl.³ B01J 21/16

U.S. Cl. 502—84 13 Claims

1. A process for the preparation of a stabilized, porous expanded layer, smectite clays comprising:

(a) contacting an aqueous slurry of smectite clay with an aged chromium-oligomer solution,

(b) separating a product clay from the mixture of step (a),

(c) drying said product clay, and

(d) stabilizing said product clay by an inert gas atmosphere heat treatment including a temperature above about 200° C. to effect the production of a stabilized clay, which when contacted with air at a temperature above 300° C. for at least two hours a majority of said clay is maintained in an expanded state.

10. A porous catalytic material comprising, a smectite clay having expanded molecular layers, a multiplicity of chromium-base "pillars" interposed between the molecular layers of said smectite clay, said chromium-base "pillars" maintaining the spacing of said expanded molecular layers at a temperature of at least 300° C. in an air atmosphere for 2 hours wherein said material having been produced by a process comprising:

(a) contacting an aqueous slurry of smectite clay with an aged chromium-oligomer solution,

(b) separating a product clay from the mixture of step (a),

(c) drying product clay, and

(d) stabilizing product clay by an inert gas atmosphere heat treatment including a temperature above about 200° C.

4,452,911

FRANGIBLE CATALYST PRETREATMENT METHOD FOR USE IN HYDROCARBON HYDRODEMETALLIZATION PROCESS

Richard M. Eccles, Princeton; Allen S. U. Li, Morristown; Shyy-Jong D. Lin, Delran; Virginia A. Malik, Cranbury, and Michael C. Chervenak, Pennington, all of N.J., assignors to HRI, Inc., Gibbsboro, N.J.

Filed Aug. 10, 1983, Ser. No. 521,861

Int. Cl.³ B01J *21/02, 23/16;* **B02C** *19/06, 25/00*

U.S. Cl. 502—100 **7 Claims**

1. A method for treating a frangible granular catalyst material prior to use in a hydrocarbon feedstock hydroconversion operation, comprising:

(a) fluidizing the fringible catalyst particles in an upflowing gas at a gas superficial velocity of 0.5–3 ft/sec. for at least about 20 hours to attrite the particle sharp edges and thereby stabilize the particle shape and size; and

(b) segregating the attrited and stabilized catalyst particles, and removing those particles having a narrow differential size range wherein the particle equivalent diameter ratio of large to small particles does not exceed about 2.0 for subsequent use in a demetallization reaction process for hydrocarbon feedstocks.

4,452,912

PROCESS FOR PRODUCING A SUPPORTED CATALYST FOR THE POLYMERIZATION OF α-OLEFINS

Müfit Bahadir, Zolling, and Wolfgang Payer, Wesel, both of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,792

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1982, 3223331

Int. Cl.³ C08F *4/02, 4/64, 4/68*

U.S. Cl. 502—111 **33 Claims**

1. A catalyst for the polymerization of α-olefins comprising

(a) a porous metal oxide containing magnesium monoalkoxy groups,

(b) a transition metal compound and

(c) at least one organometallic compound of metals belonging to Groups I to III of the Periodic Table,

wherein said magnesium monoalkoxy groups are bound to said metal oxide via at least one oxygen atom.

19. The process of claim **18**, wherein said magnesium monoalkoxy groups are bound through oxygen to said metal oxide.

20. The process of claim **19** comprising reacting an organomagnesium alkoxide of the general formula R^1MgOR^3 with a finely particulate, porous, hydroxyl group-containing metal oxide.

21. The process of claim **19**, comprising forming said bound metal oxide by reacting a finely particulate, porous, hydroxyl group-containing metal oxide with a magnesium compound of the general formula R^1R^2Mg, wherein R^1 and R^2 are individually straight or branched chain alkyl with 1 to 16 carbon atoms or unsubstituted phenyl, washing out excess magnesium compound to form said solid, and reacting said solid with an amount of alcohol of the general formula R^3OH, wherein R^3 is straight or branched chain alkyl with 1 to 10 carbon atoms, said amount being equivalent to the amount of magnesium bound via oxygen.

4,452,913

METAL CARBON CATALYST PREPARATION

Geoffrey A. Ozin, 63 Gormley Ave., Toronto, Ontario, M4V 1Y9, and Mark P. Andrews, 374 Markham St., Toronto, Ontario, both of Canada

Filed Dec. 30, 1982, Ser. No. 454,885

Int. Cl.³ B01J *21/18*

U.S. Cl. 502—184 **10 Claims**

1. A process for preparing carbon-metal catalysts having a substantial amount of catalytically active metal deposited on the surface of the carbon in zero-valent, small cluster form, which comprises:

vaporizing the metal in the vicinity of an organic or inorganic liquid solvent;

dissolving the metal as a labile solvated zero-valent complex in the liquid solvent;

contacting a solution of the solvated metal complex, with a solid particulate carbon so as to cause deposition of the solvated metal complex onto the surface of the carbon;

and removing excess liquid solvent or solution from the carbon.

4,452,914

TITANIUM COMPLEXES AND CATALYSTS PREPARED THEREFROM

William M. Coleman, III, Lake Jackson, and Morris S. Edmondson, Alvin, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 13, 1982, Ser. No. 407,857

Int. Cl.³ C08F *4/64*

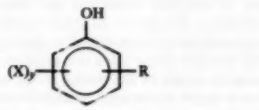
U.S. Cl. 502—122 **75 Claims**

18. In a Zeigler-Natta catalyst containing a titanium component; the improvenent which comprises employing as the titanium component that which results from reacting

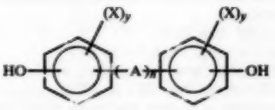
(A) at least one titanium compound represented by the formula $Ti(OR)_xX_{4-x}$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; X is a halogen and x has a value from zero to 4; with

(B) at least one compound containing at least one aromatic hydroxyl group represented by the formulas

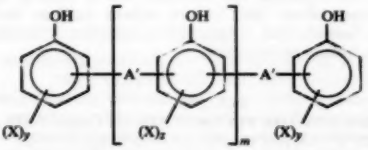
I.



II.

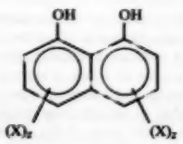


III.



IV.

V.



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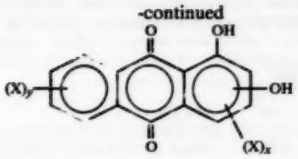
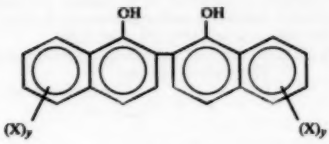
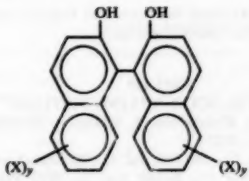
VI.



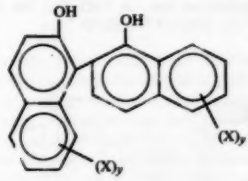
VII.



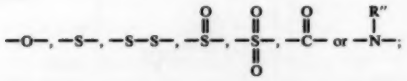
VIII.



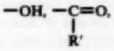
IX.



wherein each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms,



each A′ is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms; each R is independently



or a hydroxyl substituted hydrocarbyl or hydroxyl substituted hydrocarbyloxy group having from 1 to about 20 carbon atoms; each R′ is independently hydrogen, hydroxyl or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 10 carbon atoms; each R″ is independently hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; each X is independently a hydroxyl group, a nitro group, a nitrile group, a hydrocarbyl group, a hydrocarbyloxy group, a hydroxyl substituted hydrocarbyl or a hydroxyl substituted hydrocarbyloxy group each such groups having from 1 to about 20 carbon atoms or a halogen; m has an average value of from about 0.01 to about 6; each n independently has a value of zero or 1; each X independently has a value of zero to 2; each y independently has a value of from zero to 4, and z has a value of from zero to 3; and wherein components (A) and (B) are employed in quantities which provides a molar ratio of B:A of from about 0.1:1 to about 10:1.

4,452,915

NICKEL OXIDE CATALYST SUPPORTED ON MAGNESIUM FOR THE SELECTIVE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS WITH AN ALKANE

John E. Dabrowski, Lawrenceville, N.J., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 863,416, Dec. 22, 1977, Pat. No. 4,225,732.
This application Apr. 18, 1980, Ser. No. 141,671
Int. Cl.³ B01J 23/78
U.S. Cl. 502—328 1 Claim

1. A composition for the production of alkylated phenol, said composition comprising:

(a) a phenolic compound; methane and

(b) a catalyst composition which consists essentially of 10% by weight of nickel oxide dispersed on magnesium oxide.

4,452,916

HYDROPHILIC COPOLYMERS BASED ON N-[TRIS(HYDROXYMETHYL)METHYL]-ACRYLAMIDE, PROCESSES FOR THEIR PREPARATION, AQUEOUS GELS OF SAID COPOLYMERS AND THEIR USE AS ION EXCHANGERS

Egisto Boschetti, Chatou, France, assignor to Pharmindustrie, Gennevilliers, France

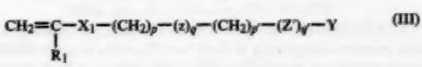
Continuation of Ser. No. 258,130, Apr. 27, 1981, abandoned.
This application Sep. 8, 1982, Ser. No. 415,961
Claims priority, application France, May 9, 1980, 80 10382
Int. Cl.³ C08F 220/58; B01D 15/00; C08L 5/00, 89/00
U.S. Cl. 521—38 12 Claims

1. Tridimensional cross-linked random copolymers, insoluble in water, containing in copolymerized form:

(a) 25% to 98% by weight of N-[tris(hydroxymethyl)methyl]acrylamide or N-[tris(hydroxymethyl)methyl]methacrylamide or a mixture of these two compounds;

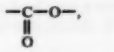
(b) 2% to 50% by weight of one or more monomers possessing two or several polymerizable ethylenic double bonds and free of anionic or cationic functional groups; and

(c) 0.1% to 50% by weight of one or more monomers corresponding to the formula:

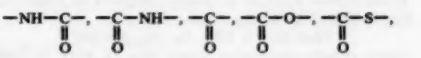


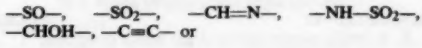
(III)

in which R_1 is a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, an SO_3H or an SO_3M group, M indicating an alkali metal, X_1 is a single bond, an oxygen atom or a $—CH_2—$,



—SO—, $—SO_2—$ or p-phenylene group, p, p′, q and q′ are whole numbers from 0 to 4, Z and Z′ are oxygen atoms or sulfur atoms or





groups, R_2 indicating a hydrogen atom or a methyl or

methoxy group, and Y represents a monosubstituted amino, disubstituted amino, pyrimidinyl, guanidyl or purinyl group, salified or not, a quaternary ammonium, SO_3H or SO_3M group, M being an alkali metal.

4,452,917

PROCESS AND A MIXING HEAD FOR THE PRODUCTION OF A REACTION MIXTURE COMPRISING AT LEAST TWO FLOWABLE REACTION COMPONENTS

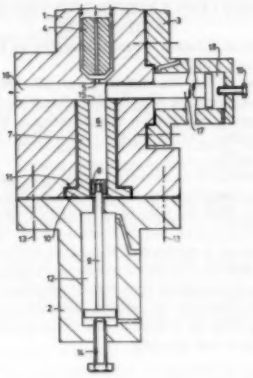
Ferdinand Proksa, Leverkusen; Hans-Michael Sulzbach, Koenigswinter; Reiner Raffel, Siegburg, and Ferdinand Althausen, Neunkirchen, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Augustin, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 509,614

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1982, 3226412

Int. Cl.³ G01F *11/06*

U.S. Cl. 521—50 **10 Claims**



1. A process for the production of a plastics-forming reaction mixture comprising at least two flowable reaction components which are injected as an incoming flow at high pressure into one end of a mixing chamber, substantially in an axial direction, are deflected at the opposite end of the mixing chamber, and exit from the mixing chamber, characterized in that after being deflected, the reaction components proceed in a counterflow to the incoming flow, while surrounding this incoming flow, with the formation of a boundary surface between this incoming flow and the counterflow, the incoming flow being mixed with the counterflow along the boundary surface.

4,452,918

TOTALLY POROUS ACTIVATED GEL

Takateru Uchida, Meguro; Kohji Noguchi, Yokohama, and Takao Kiyota, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 3, 1982, Ser. No. 374,369

Claims priority, application Japan, May 18, 1981, 56-73387

Int. Cl.³ C08F *8/12, 226/00*; B32B *3/00*

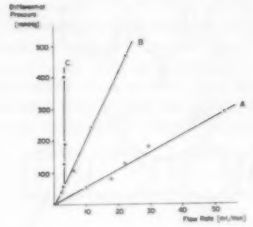
U.S. Cl. 521—52 **21 Claims**

1. A totally porous activated gel which comprises:

a matrix of a totally porous crosslinked copolymer comprising as main components vinyl alcohol monomer units and crosslinkable monomer units and having a specific surface area of 5 to 1000 m^2/g, and

a reactive group linked to said matrix by a covalent bond,

said reactive group being defined as a functional group capable of effecting addition or substitution reaction with a nucleophilic reactive group having an active hydrogen in a medium having a hydrogen ion concentration of 3 to 13 in terms of pH value at a temperature of 0 to 100° C. to



form a covalent bond between said reactive group and said nucleophilic reactive group.

4,452,919

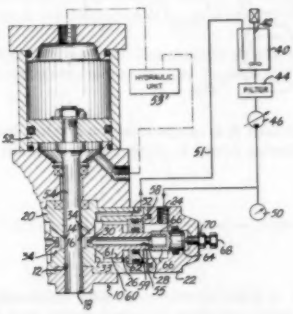
HIGH VELOCITY MIXING METHOD

Fritz W. Schneider, Erlenstrasse 1, Strasslach-Hailaring, Fed. Rep. of Germany 8021

Continuation of Ser. No. 165,015, Jul. 1, 1980, abandoned, which is a division of Ser. No. 29,669, Apr. 13, 1979, Pat. No. 4,239,732. This application Apr. 26, 1982, Ser. No. 372,061

Int. Cl.³ B01J *14/00*; B65D *5/56*

U.S. Cl. 521—99 **4 Claims**



1. A method of mixing a plurality of reactive components in a mixing head having a mixing chamber with an inlet for each component and an outlet for the mixed components, and a reciprocatable piston disposed in said chamber and movable between a retracted position in which the inlets are open and an extended position in which the inlets are blocked, comprising the steps of:

(a) supplying each component under pressure to an injection housing, through a passage therein for each component, wherein each passage has an outlet arranged to direct the respective component at one said inlet for introduction into said mixing chamber;

(b) directing each component, prior to entering said mixing chamber, through a nozzle for accelerating said components prior to delivery into the mixing chamber, said nozzle receiving its component from said passage;

(c) selectively moving said piston to block the inlets to prevent flow therethrough to thereby interrupt mixing;

(d) said blocking of each inlet producing an increase in pressure of the component downstream of said passage to thereby divert the flow to a recirculation system connected to each injection housing without interrupting the component delivery through said passages and to said inlets; and

(e) selectively retracting said piston to open said inlets to simultaneously cease recirculation and re-institute mixing, wherein mixing is re-instituted without interrupting the component delivery through said passages.

4,452,920

FLEXIBLE POLYURETHANE FOAMS HAVING JUNCTION MODIFYING PARTICULATE ADDITIVES

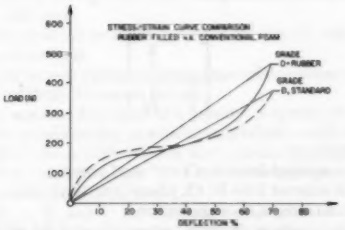
Michael D. Joubert, Port Melbourne, Australia, assignor to Joubert & Joubert Proprietary Limited, Victoria, Australia

Filed May 18, 1982, Ser. No. 379,465

Claims priority, application Australia, May 20, 1981, PE8944

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—109.1 **14 Claims**



1. A flexible polyurethane foam material having polymer cell walls and junction regions where a plurality of cell walls intersect, an average cell size in the range of about 50 to about 2,500 microns, and an average strut thickness in the range of about 10 to about 500 microns, and wherein from about 1 to about 60% by weight of said foam material comprises an organic polymeric particulate material having an average particle size that is greater than about 25% of the average cell wall thickness and less than about 100% of the average cell size, said particulate material located primarily in said junction regions.

4,452,921

PROCESS FOR THE PREPARATION OF POLYURETHANE-POLYISOCYANURATE FOAMS

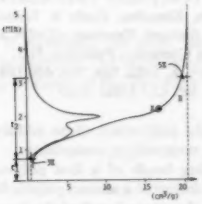
Heinrich Horacek, Frankenthal; Robert Gehm, Limburgerhof; Wolfram Frank, Heidelberg, and Matthias Marx, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 16, 1982, Ser. No. 450,436

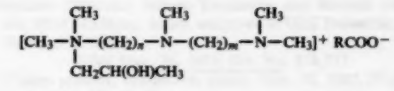
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3151041

Int. Cl.³ C08G *18/18*

U.S. Cl. 521—118 **5 Claims**



1. A process for the preparation of polyurethane-polyisocyanurate foams by reacting polyisocyanates with polyols in the presence of blowing agents and optionally cross-linking agents, auxiliaries and additives in the presence of an effective amount of a catalyst selected from the group consisting of amines having the formula



wherein

R is hydrogen atom or a straight chained or branched alkyl radical with 1 to 19 carbon atoms, and

n and m are whole numbers from 2 to 10 which are equal or different.

4,452,922

POLYAMIDE CO-POLYMER POLYOLS MADE WITH DIESTERS AND DIAMINES AND POLYURETHANES THEREFROM

George P. Speranza, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,430

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—137 **8 Claims**

1. A polyamide co-polymer polyol dispersion for use in highly resilient flexible foams and elastomers made by the reaction of a dicarboxylic acid or ester derivative thereof with an aliphatic diamine where the diamine is selected from the group consisting of 1,6-hexamethylenediamine and piperazine, in the presence of a polyether polyol wherein the combined portion of dicarboxylic acid or ester derivative/aliphatic diamine co-polymer is about 1 to 30 wt. % of the polyether polyol portion and the mole ratio of diester to diamine is about 1:1.

4,452,923

POLYMER-MODIFIED POLYOLS

William G. Carroll, Lancashire, and Peter Farley, Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 20, 1982, Ser. No. 400,222

Claims priority, application United Kingdom, Oct. 28, 1981, 8132538

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—167 **10 Claims**

1. A polymer-modified polyol obtained by reacting a polyisocyanate with a tertiary-N-polyolamine in the presence of a first polyol in amounts such that the weight of the reaction product of the polyisocyanate and polyolamine is from 40 to 80% of the combined weight of the reaction product and first polyol and subsequently diluting the reaction product with a second polyol, which is the same as or different to the first polyol, to less than 40% by weight of the reaction product on the combined weight of the reaction product and polyols.

4,452,924

FLEXIBLE POLYURETHANE FOAMS HAVING IMPROVED LOAD BEARING CHARACTERISTICS

David A. Radovich, Imperial, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 5, 1983, Ser. No. 491,681

Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—174 **7 Claims**

1. A method of increasing the load bearing of a flexible polyurethane foam prepared by reacting an organic polyisocyanate and a polyol in the presence of a blowing agent, a catalyst and a foam stabilizer, said method comprising substituting for from 5% by weight to 100% by weight of said polyol, a coupled polyol which consists essentially of the reaction product of an organic polyisocyanate and an organic compound having a hydroxyl functionality greater than 2, the isocyanate

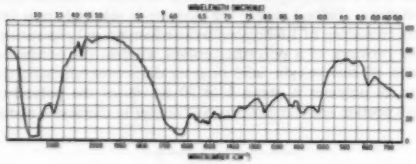
index used to produce said coupled polyol being from 10 up to the index at which gel occurs.

4,452,925

BIOLOGICALLY STABILIZED COMPOSITIONS COMPRISING COLLAGEN AS THE MINOR COMPONENT WITH ETHYLENICALLY UNSATURATED COMPOUNDS USED AS CONTACT LENSES

Petr Kuzma, Dayton, and Giovanina Odorisio, Palisades Park, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,749
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ G02C 7/04; C08H 1/00
U.S. Cl. 523—106 29 Claims



1. A polymerized hydrophilic water-swellable composition made from a mixture of components consisting essentially of:

(a) solubilized collagen; and

(b) an ethylenically unsaturated monomer of the group consisting of the following:

(i) the unsubstituted, N-substituted and N,N-disubstituted 2-alkenamides wherein each N substituent is hydrogen or a (C_1–C_6)alkyl, and wherein the 2-alkenoyl group of the 2-alkenamide molecule contains from 2–6 carbon atoms;

(ii) the vicinal-epoxyalkyl 2-alkenoates wherein the vicinal-epoxyalkyl group contains from 2 to 4 carbon atoms and wherein the 2-alkenoate group contains from 2–6 carbon atoms;

(iii) the hydroxy(alkoxy)$_n$alkyl 2-alkenoates wherein the alkyl and alkoxy groups contain from 2 to 4 carbon atoms, and wherein n is an integer of from zero to 4, and wherein the 2-alkenoate group contains from 2 to 6 carbon atoms;

(iv) the alkoxy(alkoxy)$_n$alkyl 2-alkenoates wherein the alkyl and alkoxy groups contain from 2 to 4 carbon atoms, with the proviso that the terminal alkoxy group contains from 1 to 4 carbon atoms, wherein n is an integer of from zero to 4, and wherein the 2-alkenoate group contains from 2 to 6 carbon atoms;

(v) the dialkylaminoalkyl 2-alkenoates wherein the alkyl groups contain from 1 to 4 carbon atoms and wherein the 2-alkenoate group contains from 2 to 6 carbon atoms; and

(vi) N-vinylpyrrolidone;

(c) said polymerized hydrophilic composition containing from 0.5 to less than 50 weight percent of solubilized collagen and from 99.5 to about 50 weight percent of ethylenically unsaturated monomer units, based on the total weight of the components.

4,452,926

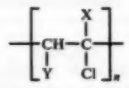
RESIN-COATED SAND COMPOSITION AND METHOD FOR PRODUCING SAME

Noriaki Matsushima; Yukio Saeki, and Hajime Kirabayashi, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Nov. 5, 1982, Ser. No. 439,524
Claims priority, application Japan, Nov. 10, 1981, 56-180526
Int. Cl.³ C08K 5/02
U.S. Cl. 523—145 27 Claims

1. A resin-coated foundry sand for shell-molding operations comprising foundry aggregates coated with a lubricant-containing phenolic resin and one or more organic chlorides, said chlorides characterized by a 20% weight of heating loss in the range of 130°–550° C. said organic chlorides selected from:

(a) chlorine containing polymers having the following formula in the main chain:



where:

X is selected from H, Cl and alkyl group

Y is selected from H, Cl, phenyl and alkyl group

n is an integer, 2 or greater, or

(b) cyclo-organic chloride compounds; and the proportion of organic chlorides to lubricant-containing phenolic resin is from about 0.1 part to about 50 parts organic chlorides to 100 parts phenolic resin.

4,452,927

RESIN COATED SAND FOR SHELL MOLDING PROCESS

Noriaki Matsushima; Yukio Saeki, and Yukio Tokunaga, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Jan. 5, 1983, Ser. No. 455,705
Claims priority, application Japan, Jan. 7, 1982, 57-1506
Int. Cl.³ C08K 5/05
U.S. Cl. 523—147 9 Claims

1. Resin coated foundry sand comprising foundry aggregates coated with phenolic resin, having incorporated therein a polyethylene glycol having a number average molecular weight range of about 1,500 to about 40,000, at a ratio of 0.5 to 40 parts polyethylene glycol per 100 parts phenolic resin.

4,452,928

ADDITIVE-CONTAINING POLYOLEFIN BEADS AND PROCESS FOR THEIR PREPARATION

Charles A. Trischman, Kinnelon; Paula S. Weissberger, Mahwah, and Robert B. Steinert, Emerson, all of N.J., assignors to El Paso Polyolefins Company, Paramus, N.J.

Filed Nov. 8, 1982, Ser. No. 440,154
Int. Cl.³ C08J 3/20
U.S. Cl. 523—206 15 Claims

1. A process for the production of an additive-containing alpha-olefin polymer composition comprising:

intimately contacting beads of a first polyolefin with an additive and a solution of a second polyolefin in a hydrocarbon solvent, the second polyolefin having a higher solubility in hydrocarbon solvents than the first polyolefin;

evaporating the solvent in at least one evaporation zone, and recovering beads coated with precipated second polyolefin in admixture with the additive.

4,452,929

WATER REDUCIBLE EPOXY BASED COATING COMPOSITIONS

Edward J. Powers, Charlotte, N.C.; Thomas E. Walsh, Jeffersontown, and Donald R. Stewart, LaGrange, both of Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,460
Int. Cl.³ C08L 63/02
U.S. Cl. 523—403 8 Claims

1. A coating composition comprising

A. an aqueous solution of a resinous composition which is the reaction product of:

(i) about 55 to about 90 weight percent of a glycidyl polyether of a dihydric phenol having an epoxide equivalent weight of about 400 to about 1200;

(ii) about 8 to about 44.1 weight percent of a polyethylene glycol having a molecular weight of about 300 to about 2000; and

(iii) about 0.9 to about 2 weight percent of ortho phosphoric acid;

wherein said aqueous solution has a solids content of about 20 to about 50 weight percent;

B. an aqueous dispersion of a glycidyl polyether of a dihydric phenol having an epoxide equivalent weight of about 400 to about 2000, wherein said aqueous dispersion has a solids content of about 30 to about 70 weight percent; and

C. an alkoxymethylmelamine

wherein A, B, and C are blended in such amounts that the coating composition contains about 30 to about 60 weight percent of the reaction product of A, about 40 to about 60 weight percent of the glycidyl polyether of B and 0 to about 10 weight percent of C, said weight percents being based on the total weight of reaction product, glycidyl polyether and alkoxymethylmelamine.

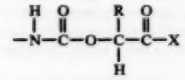
4,452,930

CURABLE COMPOSITIONS CONTAINING NOVEL URETHANE CURING AGENTS

Thomas C. Moriarity, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 10, 1983, Ser. No. 465,703
Int. Cl.³ C08G 18/80
U.S. Cl. 523—418 25 Claims

1. A curable composition comprising an active hydrogen-containing material, and a curing agent having a urethane-containing moiety of the structure:



wherein R is hydrogen, an alkyl, alkenyl or aryl group, wherein X is hydrogen, an alkyl, alkenyl or aryl group, or wherein X is a moiety of the structure:

of which R_1 and R_2 are, each independently, hydrogen, an alkyl, alkenyl or aryl group, or members of a cyclic or heterocyclic group; said curing agent is present as a separate component or an integral component of the active hydrogen-containing material.

4,452,931

FLAME-RETARDANT POLYAMIDE RESIN COMPOSITION

Hidemasa Okamoto; Mitsuo Yamanaka, and Mokoto Takahashi, all of Hirakata, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

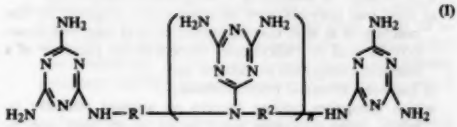
Filed Mar. 24, 1983, Ser. No. 478,377
Claims priority, application Japan, Mar. 30, 1982, 57-50039; Apr. 13, 1982, 57-60351
Int. Cl.³ C08K 5/09, 5/34
U.S. Cl. 524—100 5 Claims

1. A flame-retardant polyamide resin composition comprising:

(A) a polyamide resin matrix; and

(B) 1% to 50% based on the weight of said polyamide resin matrix, of a flame retarder consisting essentially of:

(1) a first flame-retarder component consisting essentially of at least one melamine derivative of the formula (I)



(I)

wherein R^1 and R^2 represent, independently from each other, a divalent hydrocarbon radical having 1 to 15 carbon atoms and n represents zero or an integer of 1 to 5, and

(2) a second flame-retarder component consisting essentially of at least one member selected from the group consisting of melamine cyanurate, and substituted melamine cyanurate compounds having at least one substituent selected from methyl, phenyl, carboxymethyl, 2-carboxyethyl, cyanomethyl and 2-cyanomethyl radicals substituted for amino radicals and/or hydroxyl radicals in the melamine cyanurate structure.

4,452,932

INHIBITION OF ESTER-CARBONATE INTERCHANGE IN POLYESTER-POLYCARBONATE BLENDS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

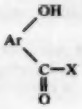
Filed Jun. 9, 1983, Ser. No. 502,825
Int. Cl.³ C08K 5/13, 5/15
U.S. Cl. 524—110 19 Claims

1. A process for stabilizing a composition comprising

at least one poly(alkylene dicarboxylate) prepared by the reaction of at least one alkenediol with at least one dicarboxylic acid or dialkyl ester thereof in the presence of a titanium compound as catalyst and

at least one aromatic polycarbonate,

which comprises blending therewith an amount effective to inhibit ester-carbonate interchange of at least one inhibitor selected from the group consisting of dehydroacetic acid and hydroxyaromatic compounds of the formula



wherein Ar is an aromatic hydrocarbon radical in which the —OH and

substituents occupy ortho positions and X is hydrogen, lower alkyl or aryl, said hydroxyaromatic compound being unsubstituted or contains upto two hydroxy groups per aromatic radical.

4,452,933

STABILIZED POLYESTER-POLYCARBONATE BLENDS AND STABILIZATION PROCESS THEREFOR

Russell J. McCready, Mt. Vernon, Ind., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,826

Int. Cl.³ C08K *5/20, 5/11, 5/10, 5/09*

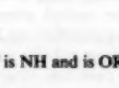
U.S. Cl. 524—217 **22 Claims**

1. A process for stabilizing a composition comprising

at least one poly(alkylene dicarboxylate) prepared by the reaction of at least one alkenediol with at least one dicarboxylic acid or dialkyl ester thereof in the presence of a titanium compound as catalyst and

at least one aromatic polycarbonate,

which comprises adding thereto an amount effective to inhibit ester-carbonate interchange of at least one α-hydroxy or α-amino aliphatic acid derivative, or o-hydroxy or σ-amino aromatic acid derivative, of the formula



wherein:

X^1 is 0 or NH;

X^2 or OR^5 when X^1 is NH and is OR^5 or NHR^5 when X^1 is 0;

Z is CH or a single-ring aromatic carbocyclic radical in which the X^1H and

moieties occupy ortho positions;

R^4 is hydrogen, a lower alkyl radical or a lower aryl radical which optionally contains hydroxy or $COOR^5$ substituents; and

R^5 is hydrogen, lower alkyl or lower aryl.

22. A stabilized composition prepared by the process of any one of claims **1**, **9–11**, **15**, **16** and **18–21**.

4,452,934

AMINOPLAST RESIN COMPOSITIONS

John H. Swafford, Stone Mountain, Ga., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Sep. 28, 1981, Ser. No. 306,378

Int. Cl.³ C08K *5/01, 5/17;* **C08L** *61/20, 61/24*

U.S. Cl. 524—243 **29 Claims**

1. A method for producing an aminoplast resin composition comprising the following steps:

(a) stirring a starting mixture containing the following ingredients:

(i) an amino-aldehyde precursor comprising at least about 20% by weight of said starting mixture,

(ii) a surfactant that is cationically-charged in an acidic environment,

(iii) an organic compound selected from the group consisting of hydrocarbons, animal oils and vegetable oils, said organic compound having an average carbon chain length of about 12 or higher and present in said starting mixture in an amount sufficient to form an emulsion with said surfactant, and

(iv) water;

(b) if the pH of said starting mixture falls below about 5, adding base with stirring to adjust the pH of said starting mixture to a desired pH above about 5;

(c) adding an acid catalyst to said starting mixture with stirring to form a reactive mixture, the acid catalyst being present in an amount sufficient to drive the polymerization reaction of said amino-aldehyde precursor to completion; and

(d) recovering the aminoplast resin composition produced.

4,452,935

INTERLAYER FILM FOR LAMINATED GLASS

Shigeru Nomura, Itami; Masashi Miyakawa, Ichikawa, and Ken-ichi Asahina, Shiga, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 26, 1982, Ser. No. 382,359

Claims priority, application Japan, Jun. 1, 1981, 56-84111; Aug. 14, 1981, 56-128038

Int. Cl.³ C08K *5/11*

U.S. Cl. 524—290 **8 Claims**

1. A wound or a stacked interlayer film for a laminated glass, which comprises polyvinyl butyral and a plasticizer and which film as measured with a smooth surface has a peel strength at 20° C. of not more than 0.5 kg/cm, said polyvinyl butyral satisfying the following expression

$$Y \geq -3X + 486$$

wherein X is the degree of butyralization in mole % and Y is the half-value width in cm^{-1} of hydroxyl adsorption in the infrared absorption spectrum of the polyvinyl butyral in which the ordinate represents the transmittance and the abscissa represents the wave number, said interlayer film having fine raised and depressed portions formed on the surface thereof and which interlayer film is wound or stacked without spraying a powdery adhesion preventing agent thereupon so that the surface of the film makes contact with itself.

4,452,936

OLIGOMERIZED ACIDS AS SCORCH INHIBITORS FOR CARBOXYLATED RUBBERS

Donald C. Grimm, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 17, 1982, Ser. No. 379,250

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—322 **14 Claims**

1. An improved scorch resistant carboxylated nitrile rubber composition comprising: a carboxylated nitrile rubber and at least one oligomerized fatty acid which is distributed throughout said carboxylated nitrile rubber to improve the scorch safety of said carboxylated nitrile rubber composition without significantly affecting the cure rate of said carboxylated nitrile rubber composition.

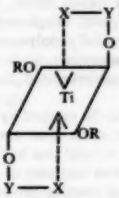
4,452,937

ETHYLENE POLYMER COMPOSITIONS STABILIZED AGAINST WATER TREEING AND ELECTRICAL TREEING BY AN ORGANO TITANIUM CHELATE; AND THE USE THEREOF AS INSULATION ABOUT ELECTRICAL CONDUCTORS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 218,794, Dec. 22, 1980, Pat. No. 4,369,331. This application Nov. 5, 1982, Ser. No. 439,172
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.³ C08F *10/02*
U.S. Cl. 524—398 **12 Claims**

1. A polymer composition, devoid of added mineral filler, comprising polyethylene and an organo titanium chelate having the general formula:



where X is oxygen or nitrogen, Y is a two or three carbon chain and R is alkyl or the ligand X—Y—OH wherein X and Y are as defined, said chelate being selected from the group consisting of tetraoctylene glycol titanium chelate, dodecanol phenyl salicylate tetraisopropyl titanium chelate, phenyl salicylate isopropyl-tri-decyl titanium chelate, phenyl salicylate tetrabutyl titanium chelate, phenyl-2-hydroxy-3-naphthoate isopropyl-tri-decyl titanium chelate and triethanol amine titanium chelate, said chelate being present in an amount sufficient to improve the water treeing resistance of said composition.

4,452,938

AMORPHOUS METAL COMPOSITES

Martin A. Byrne, Troy, and John H. Lupinski, Scotia, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 206,221, Nov. 12, 1980, Pat. No. 4,358,419. This application Jul. 12, 1982, Ser. No. 397,272
Int. Cl.³ C08K *3/08*
U.S. Cl. 524—439 **7 Claims**

1. A rigid amorphous metal composite having a packing factor of above 60% consisting essentially of a mixture of amorphous metal and a thermosetting polymer binder having a molecular weight between about 1000 to 5000.

4,452,939

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT POLYMERIC ANTIDEGRADANTS

Dane K. Parker, Massillon, and Donald J. Burlett, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 28, 1983, Ser. No. 470,123
Int. Cl.³ C08K *5/20, 5/37*
U.S. Cl. 524—551 **20 Claims**

8. A process for the modification of an elastomeric latex composition which contains from 0.1 to 40 parts by weight vinylbenzyl chloride and a surfactant of a non-ionic or ionic type, said process comprising contacting said latex with an aqueous alkali solution and an alkali ionizable molecule containing antidegradant properties selected from the group consisting of chain-breaking antidegradants, peroxide decomposing antidegradants, ultraviolet screening antidegradants, triplet quenching antidegradants and metal de-activation antidegradants at a temperature below 100° C. and in the presence of a nitrogen atmosphere.

4,452,940

POLYMER WATER-IN-OIL EMULSIONS

Meyer R. Rosen, Spring Valley, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 511,978, Jul. 11, 1983, abandoned, which is a continuation of Ser. No. 302,142, Sep. 14, 1981, abandoned. This application Nov. 1, 1983, Ser. No. 547,670
Int. Cl.³ C08L *39/02*
U.S. Cl. 524—801 **9 Claims**

1. A water soluble ter-or higher addition polymer water-in-oil emulsion comprising:

(a) an aqueous phase comprising from about 60 to about 80 weight percent and containing therein from about 30 to about 70 weight percent of a ter-or higher addition polymer containing at least one polymerized hydrophobic monomer and from about 30 to about 70 weight percent of water.

(b) a hydrophobic liquid comprising from about 15 to about 39.5 weight percent; and

(c) an oil-soluble surfactant comprising from about 0.5 to about 5 weight percent, said weight percent based on the total weight of the emulsion.

4,452,941

THERMOPLASTIC ACRYLIC RESIN COMPOSITION

Kazuo Kishida, Hiroshima, Japan; Akira Hasegawa, Port Washington, N.Y., and Masahiro Sugimori, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1983, Ser. No. 500,571
Claims priority, application Japan, Jun. 7, 1982, 57-97158; Jun. 8, 1982, 57-98205; Jun. 17, 1982, 57-104634
Int. Cl.³ C08L *51/06*
U.S. Cl. 525—66 **11 Claims**

1. A thermoplastic resin composition consisting of from 1 through 99 parts by weight of at least one multi-layer structure polymer [I] and from 99 through 1 part by weight of at least one multi-layer structure polymer [II], said polymer [I] and polymer [II] having the following structures:

multi-layer structure polymer [I]:

a particulate multi-layer structure polymer comprising the following (A) and (B):

(A) an inner layer polymer (A) constituted of from 60 through 100 parts by weight of an alkyl acrylate having C_1–C_8 alkyl group (A_1), from 0 through 40 parts by weight of a monomer having copolymerizable double bond (A_2), from 0 through 10 parts by weight of a polyfunctional monomer (A_3) and from 0.1 through 5 parts by weight, per 100 parts by weight of the sum of (A_1) to (A_3), of a grafting agent, wherein gel content of said inner layer polymer (A) is 60% by weight or higher and its proportion to said polymer [I] is from 5% by weight through 46% by weight;

(B) an outer layer polymer (B) constituted of from 60 through 100 parts by weight of an alkyl methacrylate having C_1–C_4 alkyl group (B_1) and from 0 through 40 parts by weight of a monomer having copolymerizable double bond (B_2), wherein the proportion of said outer layer polymer (B) to said polymer [I] is from 54% by weight through 95% by weight;

multi-layer structure polymer [II]:

a particulate multi-layer structure polymer comprising the following (A') and (B'):

(A') an inner layer polymer (A') constituted of from 60 through 100 parts by weight of an alkyl acrylate having

C_1–C_8 alkyl group (A_1'), from 0 through 40 parts by weight of a monomer having copolymerizable double bond (A_2'), from 0 through 10 parts by weight of a polyfunctional monomer (A_3') and from 0.1 through 5 parts by weight, based on 100 parts by weight of the sum of (A_1') to (A_3'), of a grafting agent, wherein gel content of said inner layer polymer (A') is 60% by weight or higher and its proportion to said polymer [II] is larger than 46% by weight and not larger than 90% by weight;

(B') an outer layer polymer (B') constituted of from 60 through 100 parts by weight of an alkyl methacrylate having C_1–C_4 alkyl group (B_1') and from 0 through 40 parts by weight of a monomer having copolymerizable double bond (B_2'), wherein the proportion of said outer layer polymer (B') to said polymer [II] is lower than 54% by weight and not lower than 10% by weight.

4,452,942
ADHESIVE BLENDS CONTAINING ANACID OR ANHYDRIDE GRAFTED LLDPE

Mitsuzo Shida, Barrington; Robert Zeitlin, Palatine; John Machonis, Jr., Schaumburg, and Ashok M. Adur, Rolling Meadows, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Feb. 19, 1982, Ser. No. 350,265
Int. Cl.³ C08L *23/26, 23/04, 51/06*
U.S. Cl. 525—74 **5 Claims**

1. An adhesive blend comprising:

(a) about 0.1–95 parts by weight in said blend of a graft copolymer of about 70–99.95 wt. % of an LLDPE backbone grafted with about 30–0.05 wt. % of at least one grafting monomer comprising at least one polymerizable ethylenically unsaturated carboxylic acid or carboxylic acid anhydride or about 50–99.90 wt. % of LLDPE backbone cografted with about 0.05–25 wt. % of said grafting monomer and about 0.05–25 wt. % of an unsaturated ester, said LLDPE backbone having a density of about 0.91–0.939 g/cc, for a total of 100% and

(b) about 99.9–5 parts by weight of a blending resin selected from the group consisting of homopolymers of ethylene, α-olefin copolymers of ethylene, copolymers of ethylene and ethylenically unsaturated esters or their derivatives, and blends thereof.

4,452,943
THERMOFORMING OF THERMOPLASTIC POLYMERS

Conrad Goldman, P.O. Box 7033, Hicksville, N.Y. 11802

Continuation of Ser. No. 179,540, Sep. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 792,933, Jan. 22, 1969, abandoned, and Ser. No. 793,751, Jan. 24, 1969, Pat. No. 3,624,189. This application Jan. 16, 1974, Ser. No. 433,688
The portion of the term of this patent subsequent to Mar. 5, 1996, has been disclaimed.
Int. Cl.³ C08L *45/07, 33/04*
U.S. Cl. 525—105 **20 Claims**

1. A polymeric composition consisting essentially of

(a) from about 80% to about 99% of a thermoplastic polymer selected from the group consisting of a polyethylene, a polypropylene, a copolymer of butadiene and styrene, a copolymer of ethylene and propylene, a polystyrene, a natural rubber, a polybutadiene, an admixture of an acrylonitrile-styrene copolymer with an acrylonitrile-butadiene-styrene terpolymer, and admixture of an acrylonitrile-styrene copolymer with a butadiene-methacrylonitrile copolymer, an admixture of an acrylonitrile-αmethyl styrene copolymer with an acrylonitrile-butadiene-styrene terpolymer, an admixture of an acrylonitrile-αmethyl styrene copolymer with a butadiene methacrylonitrile copolymer, a polysiloxane and a polyisobutylene, said polymer having a dissipation factor of less than 0.01 and

(b) from about 1% to about 20% of a polar domain containing material selected from the group consisting of polyacrylonitrile and an acrylonitrile-butadiene copolymer, said material having a nitrile group content of at least 14.7%.

4,452,944
STRUCTURAL ADHESIVE FORMULATIONS

Terrance H. Dawdy, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Feb. 11, 1982, Ser. No. 347,847
Int. Cl.³ C08K *5/52, 5/53;* **C08L** *75/00*
U.S. Cl. 525—126 **20 Claims**

1. A room temperature-curable adhesive system comprising

A. as a polymerizable adhesive composition, a mixture of

(a) from about 10 to about 90 percent by weight of at least one polymerizable material selected from the group consisting of styrene, methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, t-butyl methacrylate, hexyl methacrylate, ethylhexyl methacrylate, partially polymerized syrup of one or more of such monomers, such syrup containing both polymer and unpolymerized monomer, and mixtures thereof;

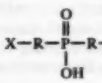
(b) from about 10 to 90 percent by weight of at least one reaction product of at least one isocyanate-functional prepolymer and at least one hydroxy-functional monomer having at least one unit of polymerizable olefinic unsaturation, such reaction product being characterized by the presence of at least two units of olefinic unsaturation and the substantial absence of free isocyanate group;

(c) from zero to about 20 percent by weight of at least one polymerizable olefinically unsaturated monomer, the amount of said monomer being in addition to the amount of any such monomer employed in (A) (a);

(d) from zero to about 40 percent by weight of at least one elastomeric polymeric material having a second order glass transition temperature below about 5°;

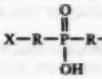
the respective percentages of (a)–(d) being based on the total weight of (a)–(d);

(e) an effective amount of at least one phosphorous-containing compound having the formulae



I.

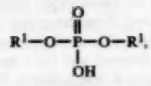
wherein each R is the same or different, and each R is independently a divalent organic radical directly bonded to the phosphorous atom through a carbon-phosphorous bond, said divalent radical being selected from the group consisting of divalent unsubstituted organic radical and divalent organic radical having at least one substituent group selected from the class consisting of halogen, hydroxyl, amino, alkyl radical containing from 1 to 8 carbon atoms and aryl radical having at least one moiety containing at least one aromatic nucleus; and wherein each X is the same or different, and each X is independently a functional group selected from the class consisting of hydrogen, hydroxyl, amino, mercapto, halogen and CH=C<;



II.

wherein R and X are as previously defined; and R^1 is hydrogen or $—R^2—X$, wherein R^2 is a divalent organic radical directly bonded to the oxygen radical through a carbon-oxygen bond, said divalent readical R^2 being

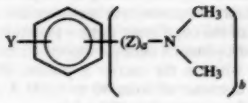
selected from the group having at least one substitutent group selected from the class consisting of halogen, hydroxyl, amino, alkyl radical containing from 1 to 8 carbon atoms and aryl radical having at least one moiety containing at least one aromatic nucleus and X is as previously defined; and



wherein R^1 is as previously described;

(f) an effective amount of at least one reducing agent;

(g) from zero to about 10 percent by weight of polymerizable adhesive composition of at least one tertiary amine having the formula



wherein Z is methylene; Y is selected from the group consisting of hydrogen, hydroxy, amino, halogen, alkyl radical having from 1 to 8 carbon atoms, and alkoxy radicals wherein the alkyl moiety has from 1 to 8 carbon atoms; a is zero or 1; and b is 1 or 2;

(h) from zero to about 15 percent by weight of polymerizable adhesive composition of a mixture of a metal molybdate selected from the group consisting of zinc molybdate, calcium molybdate, barium molybdate, strontium molybdate and mixtures thereof and a metal phosphate selected from the group consisting of zinc phosphate, calcium phosphate, magnesium phosphate and mixtures thereof; said metal molybdate being present on a volume concentration basis of from about 2 to about 3 parts per part of said metal phosphate; and

(i) from zero to about 15 percent by weight of polymerizable adhesive composition of at least one compound selected from the group consisting of polybasic lead salts of phosphorous acid, polybasic lead salts of saturated organic dicarboxylic acids and acid anhydrides, polybasic lead salts of unsaturated organic dicarboxylic acids and acid anhydrides, zinc oxide, and mixtures thereof;

the percentage of (a)–(d) being 100 minus the combined percentages of (e)–(i); and

B. as a bonding accelerator an effective amount of at least one oxidizing agent, said oxidizing agent being reactive at room temperature with said reducing agent to generate free radicals effective to initiate addition polymerization of said polymerizable adhesive composition;

said polymerizable adhesive composition being characterized by the substantial absence of free organic and inorganic acid compounds, except for the phosphorus-containing compound.

4,452,945

CROSSLINKABLE COATING COMPOSITIONS CURED BY A SPECIFIED BLEND OF ALKYLARYLSULPHONIC ACIDS

Thomas N. E. Bowen, Hilden, Fed. Rep. of Germany; Peter Butler, and Auguste L. L. Palluel, both of Slough, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 26, 1982, Ser. No. 372,165

Claims priority, application United Kingdom, Apr. 28, 1981, 8113047; Jul. 23, 1981, 8122691

Int. Cl.³ C08L *61/28*; B32B *15/08*

U.S. Cl. 525—161 **11 Claims**

1. A coating composition comprising:

(i) from 90% to 50% by weight of a hydroxyl group-containing addition polymer obtained by the copolymerisation of α,β-ethylenically unsaturated monomers including at least one hydroxyalkyl ester of an α,β-ethylenically unsaturated carboxylic acid;

(ii) from 10% to 50% by weight of a crosslinking agent consisting of a substantially fully alkylated melamine-formaldehyde reaction product in which the alkyl groups contain from 1 to 4 carbon atoms; and

(iii) an acid catalyst consisting of a blend of an alkylated arylsulphonic acid in which the or each alkyl group contains from 1 to 3 carbon atoms and an alkylated arylsulphonic acid in which the or each alkyl group contains from 8 to 14 carbon atoms, such that the total content of sulphonic acid ($—SO_3H$) group is in the range 0.70% to 2.1% of the total weight of constituents (i) and (ii).

4,452,946

ACIDPROOF LINING MATERIAL

Vladimir M. Tomilo; Stanislav A. Potapov; Nikolai G. Khudyakov; Svetlana M. Travnitskaya, all of Tolyatti; Vladimir M. Kornienko, Moscow; Viktor V. Dobroljubov, Moscow; Sergei V. Chekhovsky, Moscow; Galina V. Fedorenko, Moscow, and Valentina I. Grabylnikova, Moscow, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Nerudnykh Stroitelnykh Materialov I/Gidromekhanizatsii, Tolyatti, U.S.S.R.

Filed Jul. 8, 1983, Ser. No. 512,161

Int. Cl.³ C08K *3/04*

U.S. Cl. 524—541 **1 Claim**

1. An acidproof lining material consisting of natural amorphous graphite, novolac and resol phenol-formaldehyde resins and a hardener, the ratio of said components in the acidproof lining material being as follows (in % by weight):

natural amorphous graphite	70–80
novolac phenol-formaldehyde resin	9–22.5
hardener	1–2.5
resol phenol-formaldehyde resin	5–15.

4,452,947

PROCESS FOR THE PRODUCTION OF SULPHUR-MODIFIED SOLID CHLOROPRENE RUBBERS

Rüdiger Musch, Bergisch-Gladbach; Wilhelm Göbel, Leverkusen; Eberhard Müller, Dormagen, and Wolfgang Konter, Neuss, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 436,515, Oct. 25, 1982, abandoned. This application May 20, 1983, Ser. No. 496,413

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1981, 3143524

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—194 **3 Claims**

1. A process for the production of sulphur-modified, vulcanisable solid chloroprene rubbers having viscosities of from 60

to 35 MU and sulphur contents of from 0.5 to 0.7%, by weight, in the batch as a whole, comprising polymerising chloroprene in the presence of from 0.10 to 0.35%, by weight, of sulphur to form a latex I, polymerising chloroprene in the presence of from 0.50 to 1.00%, by weight, of sulphur to form a latex II, mixing latices I and II in a ratio of from 4:1 to 1:4 (based in each case on solids), peptising, the mixed latex, adjusting the pH to <7, coagulating and drying the mixture to form the solid rubber, the percentages quoted being based on the quantity of monomer.

4,452,948

COATING COMPOSITION COMPRISING A HYDROXY COMPONENT, AN ANHYDRIDE COMPONENT AND A CATALYST

Alistair R. Marrion, Hollywood; Susan Roy, Warwick, and Frank E. Rowe, Warley, all of England, assignors to The International Paint Company Limited, London, England

Filed Sep. 1, 1981, Ser. No. 298,387

Claims priority, application United Kingdom, Sep. 10, 1980, 8029202

Int. Cl.³ C08F *20/08*

U.S. Cl. 525—207 **12 Claims**

1. A coating composition comprising

(a) a hydroxy component and,

(b) an anhydride component,

in which the hydroxy component (a) is a film-forming polymer having at least two free hydroxyl groups per molecule, and also has in its molecule a catalytically effective amount of amine groups for accelerating the curing reaction between the hydroxyl groups of (a) and the anhydride groups of (b), and,

the anhydride component (b) is a polymer having at least two cyclic carboxylic acid anhydride groups per molecule and is derived from an olefinically unsaturated cyclic carboxylic acid anhydride,

the components (a) and (b) being compatible on mixing.

4,452,949

WATER-SOLUBLE PARTIALLY SAPONIFIED COPOLYMERS BASED ON VINYL ACETATE AND METHYL ACRYLATE AND THEIR USE FOR DELAYING THE POLYMERIZATION OF STYRENE

Ernst Penning, Ludwigshafen; Bernd Stanger, Dudenhofen, and Alfred Mueller, Biblis, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,961

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117395

Int. Cl.³ C08F *8/12, 228/02*

U.S. Cl. 525—328.2 **3 Claims**

1. A water-soluble, partially saponified copolymer produced by

(A) copolymerization of

(a) 45 to 55 percent by weight of vinyl acetate,

(b) 40 to 50 percent by weight of methyl acrylate,

(c) 4 to 8 percent by weight of acrylic acid

(d) 0.2 to 10 percent by weight of a monoolefinically unsaturated sulfoalkyl esters or amides, and

(e) 0.1 to 1 percent by weight of sodium vinylsulfonate,

in water in the presence of polymerization initiators and emulsifiers at a temperature of 50° C. to 90° C.

(B) partial saponification of the copolymer emulsion resulting from (A) by dissolving the copolymer by adding 4 to 7 percent by weight relative to the copolymer of an alkali hydroxide at a temperature of 20° C. to 50° C.

4,452,950

PROCESS FOR HYDROGENATION OF CARBON-CARBON DOUBLE BONDS IN AN UNSATURATED POLYMER IN LATEX FORM

Lawson G. Wideman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1983, Ser. No. 468,816

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—339 **15 Claims**

1. A process for hydrogenating carbon-carbon double bonds of an unsaturated polymer prepared from 5 to 100 percent by weight of a conjugated diene monomer unit and 95 to 0 percent by weight of ethylenically unsaturated monomer units which comprises (a) combining the unsaturated polymer in latex form with (1) an oxidant selected from the group consisting of oxygen, air and hydroperoxides; (2) a reducing agent selected from hydrazine and hydrates thereof; and (3) a metal ion activator; (b) heating the mixture to a temperature from 0° C. to the reflux temperature of the reaction mixture.

4,452,951

PROCESS FOR HYDROGENATING CONJUGATED DIENE POLYMERS

Yoichiro Kubo, Yokohama, and Kiyomori Oura, Kamakura, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,276

Claims priority, application Japan, Jul. 24, 1981, 56-116250

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—339 **11 Claims**

1. In a process for hydrogenating an acrylonitrile/butadiene copolymer which comprises hydrogenating the carbon-carbon double bonds of the copolymer using a platinum, palladium or ruthenium hydrogenation catalyst supported on a carrier, the improvement wherein the carrier is porous silica having an average pore diameter of from 80 to 1,200 Å and a specific surface area of not more than 600 m^2/g.

4,452,952

INCREASING THE REACTIVITY OF COUPLING HOMOPOLYMERS

William G. Carson, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 337,036, Jan. 4, 1982. This application Jun. 17, 1983, Ser. No. 505,162

Int. Cl.³ C08F *8/40*

U.S. Cl. 525—340 **10 Claims**

1. A process for the preparation of elastomeric polymers which comprises contacting at least one conjugated diolefinic monomer selected from the group consisting of isoprene, piperylene, 2-ethyl-1,3-butadiene, 2,3-dimethyl-1,3-butadiene and 1,3-butadiene, mixed with at least one polyvinyl aromatic coupling compound selected from the group consisting of o, m and p-divinylbenzene, 1,2,4-trivinylbenzene, 1,8-divinylnaphthalene, 1,2-divinyl-3,4-dimethylbenzene, 2,4-divinylbiphenyl, 3,5,4'-trivinylbiphenyl and 1,3,5-trivinylbenzene under solution polymerization conditions with an organolithium catalyst, in which the amount of polyvinyl aromatic coupling compound employed contains from about 0.1 to about 10 moles of vinyl groups per mole of active lithium catalyst used to produce a living polymer and then subsequently contacting said living polymer, with (A) a polar compound selected from the group consisting of ethylene glycol dimethyl ether (glyme), diethylene glycol dimethyl ether (diglyme), triethylene glycol dimethylether (triglyme), tetraethylene glycol dimethyl ether (tetraglyme), 2,3-dimethyoxybutane, N,N,N',N'tetramethylethylene-diamine (TMEDA), tri-n-butylphosphine and hexamethylphosphoric triamide (HMPA), in which the molar ratio of said polar compounds to the active lithium based on the amount of said organolithium catalyst present at the start of the polymerization, ranges from about 0.01/1 to about 20/1 or (B) a polar compound selected from the group consisting of

tetrahydrofuran, diethyl ether, triethylamine, 1,4-diazabicyclo-2.2.2-octane (DABCO), p-dioxane, tri-n-butylamine and N,N'-dimethyl piperazine, in which the molar ratio of the said compounds to the active lithium based on the amount of said organolithium catalyst present at the start of the polymerization, ranges from about 0.5/1 to about 100/1.

4,452,953

PROCESS FOR THE VAPOR PHASE CHLOROSULFONATION OF POLYOLEFINS IN THE PRESENCE OF FINELY DIVIDED INORGANIC MATERIALS

George M. Benedikt, Lakewood, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,475

Int. Cl.³ C08F 8/38

U.S. Cl. 525—344 **11 Claims**

1. In a vapor phase process for chlorosulfonating polyethylene with chlorine and sulfur dioxide, the improvement comprising conducting the chlorosulfonation reaction in a fluidized bed of powdered polyethylene and inorganic compounds consisting essentially of titanium compounds that are inert to chlorine and sulfur dioxide in the defined process, present in amounts from about 1 to 15 weight parts per 100 weight parts of polyethylene, having an average particle size of about 0.01 to 10 microns, a dielectric constant greater than about 40, and a specific conductivity ($\Omega^{-1}cm^{-1}$) value of greater than 10^{-13} to less than 10^{-1} in the temperature range of 20° to 140° C., at an initial reaction temperature of from about 20° C. to about 70° C., raising the reaction temperature to at least about the crystalline melting point of the polyethylene, the volume ratio of chlorine to sulfur dioxide being from about 20:1 to about 1:2, and continuing the reaction until the chlorosulfonated polyethylene contains greater than 25 weight percent to about 45 weight percent bound chlorine and about 0.5 to about 3 weight percent sulfur.

4,452,954

POLYESTER VARNISHES

Gerhard Schade; Martin Schmitthenner, both of Witten, and Norbert Volkommer, Troisdorf-Kriegsdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Aug. 27, 1982, Ser. No. 412,431

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134640

Int. Cl.³ C08L 67/02

U.S. Cl. 525—440 **10 Claims**

1. Thermosetting coating compositions comprising at least one binding agent and a solvent wherein the binding agent consists of

(a) 5 to 35 weight-parts of a triazine resin or a capped polyisocyanate resin and

(b) 95 to 65 weight-parts of at least one of saturated, linear polyester of dicarboxylic acids and disols, the polyester having a relative viscosity between 1.3 and 1.8, and where a dicarboxylic acid content comprises moieties of terephthalic and/or isophthalic acid and the diol content consisting of 100 to 70 mole-% of bis-(hydroxmethyl)-tricyclodecane and 0 to 30 mole-% of at least one other diol.

4,452,955

NOVEL ADHESIVE COMPOSITIONS

Charles W. Boeder, Oakdale, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sep. 16, 1981, Ser. No. 302,712

Int. Cl.³ C08K 5/20; C08L 61/06

U.S. Cl. 525—518 **24 Claims**

1. An adhesive composition consisting of an adhesive base as a first part and an initiator portion as a second part, said first part consisting essentially of (a) 100 parts by weight of a polymerizable monomer having at least one α,β-unsaturated carboxyl functionality; (b) as an accelerator, about 0.05 to 20 parts by weight of a compound selected from the group consisting of an organic sulfimide and a perfluoroalkylsulfonanilide; and (c) an effective amount of an inihibitor of free-radical polymerization to retard polymerization of said first part prior to contact of said second part therewith and to permit a desirable cure-rate after contact; and said second part comprising a condensation reaction product of an aldehyde and a primary or secondary amine; said adhesive composition being capable of polymerizing to form an adhesive bond upon contact of said first part with said second part.

4,452,956

DISCRETE SPIRAL FLOW IMPARTING DEVICE

Isaac Moked, New Brunswick; Richard H. Handwerk, South Somerville, both of N.J., and Hans J. Goettler, Fargo, N. Dak., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 93,016, Nov. 9, 1979, Pat. No. 4,284,105. This application Feb. 13, 1981, Ser. No. 234,204

Int. Cl.³ C08F 2/02

U.S. Cl. 526—64 **4 Claims**

1. A process for manufacturing polyolefin or copolymers of olefin containing up to 60 mole percent of other polymerizable monomer comprising:

(a) supplying monomer at pressure of at least 15,000 psig to an inlet of a tubular reactor having a length to diameter ratio of at least 500 to 1 and containing a tube in said reactor;

(b) polymerizing said monomer in presence of free-radical-generating initiator at temperature of at least 100° C.;

(c) imparting spiral motion to material flowing through said reactor by flowing the material past a spiral member, said spiral member having maximum length shorter than said tube; and

(d) removing polymer and unpolymerized monomer from an outlet of said reactor.

4,452,957

PROCESS FOR THE PRODUCTION OF HOMO- AND CO-POLYMERS OF QUATERNARY AMMONIUM MONOMERS

Dennis Neigel, Whitehouse Station, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 11, 1982, Ser. No. 407,015

Int. Cl.³ C08F 26/02

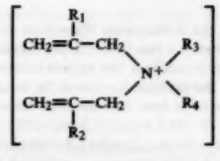
U.S. Cl. 526—71 **10 Claims**

1. A process for the production of homo- and co-polymers of a quaternary ammonium monomer in dry form comprising the steps of:

(a) forming a solution of the monomer(s), solvent and free-radical initiator;

(b) simultaneously polymerizing the monomer and drying the solution on a drum drier at a temperature above the boiling point of the solvent; and

(c) recovering the resultaant dry polymer; wherein the monomer of (a) contains at least 50% by weight of the total monomer(s) of a quaternary ammonium monomer represented by the formula:



where R_1 and R_2 each represent a member selected from the group consisting of hydrogen and methyl and ethyl radicals; R_3 and R_4 each represent a member selected from

the goup consisting of alkyl, aryl, cycloaklyl, hydroxyalkyl and alkoxyalkyl radicals having from 1 to 18 carbon atoms, and Y- represents an anion, and wherein the solvent of (a) is selected from the group consisting of water and C_{1-8} carbon components containing hydroxyl, ketone, aldehyde, ester or halide substitution.

4,452,958

OLEFIN POLYMERIZATION WITH CATALYSTS DERIVED FROM CHROMIUM EXCHANGED ZEOLITES

Arthur W. Chester, Cherry Hill; Murray: James G., East Brunswick, both of N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 336,105, Dec. 30, 1981, abandoned. This application May 23, 1983, Ser. No. 497,319

Int. Cl.³ C08F 4/22

U.S. Cl. 526—130 **13 Claims**

1. A process for polymerizing 1-olefins, which process comprises contacting 1-olefin monomer with a catalytically efffective amount of a catalyst composition comprising the ion exchange product of chromium ions with a crystalline aluminosilicate zeolite having a Constraint Index of at least about 1, said catalyst composition being activated by calcination.

4,452,959

PROCESS FOR PRODUCING A GEL-LIKE COMPOSITION OF A HIGH POLYMER OF ACETYLENE, AND PROCESS FOR MOLDING SAID COMPOSITION

Yukio Kobayashi; Hideki Shirakawa, both of Yokohama, and Sakuji Ikeda, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 224,517, Nov. 19, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,002

Int. Cl.³ C08F 38/02

U.S. Cl. 526—159 **7 Claims**

1. A process for producing a moldable composition of an acetylene high homopolymer, which comprises polymerizing acetylene using a catalyst system composed of (A) a transition metal compound of the formula $Ti(OR)_4$ wherein R represents alkyl having 4 carbon atoms, and (B) an organometallic compound of the formula AlR_3 wherein R represents alkyl having up to 10 carbon atoms, wherein the catalyst system contains 1 to 25 moles of the organometallic compound per mole of the transition metal of the transition metal compound, and the polymerization is carried out under stirring in a polymerization solvent containing the transition metal compound in a concentration of 0.0001 to 0.1 mole/liter to form an acetylene high homopolymer having a fibrous microcrystalline structure which is swollen with the polymerization solvent.

4,452,960

PROCESS FOR NONAQUEOUS DISPERSION POLYMERIZATION OF BUTADIENE IN THE PRESENCE OF POLYMERIC DISPERSING AGENTS

Morford C. Throckmorton, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1982, Ser. No. 420,065

Int. Cl.³ C08F 2/08

U.S. Cl. 526—201 **16 Claims**

1. A process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of at least one member selected from the group consisting of cis-1,4-poly(1,3-pentadiene), trans-1,4-poly(1,3-pentadiene), trans-1,2-poly(1,3-pentadiene), moderately high trans-1,4-polyisoprene, poly(2,3-dimethyl-1,3-butadiene), syndiotactic 1,2-polybutadiene, atactic 1,2-polybutadiene, butadiene/dimethylbutadiene/pentadiene terpolymers, styrene/1,3-pentadiene copolymers, EPDM rubbers, and butyl rubbers to produce very high cis-1,4-polybutadiene.

4,452,961

PROCESS FOR THE SYNTHESIS OF HEAT-CURABLE SILICONE RESINS

Götz Koerner, Essen; Manfred Priesch, Recklinghausen; Harald Rau, and Eckehard Schamberg, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 7, 1983, Ser. No. 482,955

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1982, 3214984

Int. Cl.³ C08G 77/06

U.S. Cl. 528—26 **12 Claims**

1. A process for the synthesis of a heat-curable silicone resin which is soluble in organic solvents comprising partially reacting in the presence of a catalyst:

(a) an alkoxysiloxane having the formula

$$R_a^2Si(OR^1)_bO_{\frac{4-(a+b)}{2}}$$

wherein

R^1 is a lower alkyl radical with up to 4 carbon atoms,

R^2 is an alkyl or phenyl group,

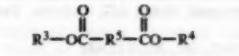
a=1.0 to 1.2, and

b=0.5 to 1.2,

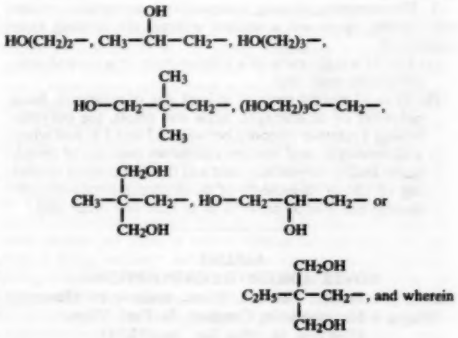
with the proviso that at least 50 weight percent of the alkoxysiloxane can be distilled at 1 to 15 mbar;

with

(b) a low molecular weight polyol having the formula



in which R^3 and R^4 are the same or different and represent the following groups:



R^5 is an alkylene, cycloalkylene or phenylene group;

with the proviso that the polyol contains at least three hydroxyl groups,

the alkoxysiloxane being reacted with the polyol to a degree of reaction not exceeding 70% but being carried out sufficiently far to produce a clear solution.

4,452,962
ACCELERATED CONDITIONING OF SILICONE-MODIFIED POLYESTER FILM TO YIELD IMMEDIATE HIGH SLIP PROPERTIES

Paul R. Ginnings, Wadsworth, and Jack E. Prince, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 7, 1983, Ser. No. 472,515
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—26 **20 Claims**

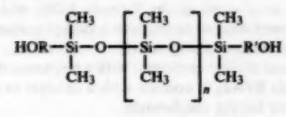
1. A method for imparting high slip properties to a silicone modified unoriented polyester, comprising the steps of:

heating the silicone modified polyester at a temperature of from about 70° C. to about 200° C. so that a low static coefficient of friction is imparted thereto, wherein said silicone modified polyester was prepared by reacting a mixture of reactants comprising:

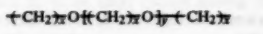
(a) at least one reactant selected from the group consisting of
(1) aromatic dicarboxylic acids having from 8 to 15 carbon atoms or C_1 to C_4 dialkyl esters thereof, and
(2) aliphatic dicarboxylic acids having from 4 to 15 carbon atoms or the C_1 to C_4 dialkyl esters thereof wherein the reactant selected from group (1) constitutes from 100 to 50 mole percent of the total moles of said reactant (a) and the reactant selected from the group (2) constitutes from 0 to 50 mole percent of the total moles of reactant (a);

(b) from about 100 to about 300 mole percent, based on the total moles of reactant (a) of at least one reactant selected from alkylene glycols containing from 2 to 10 carbon atoms; and

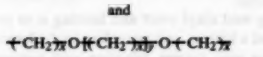
(c) from about 0.5 to about 10 weight percent based on the weight of the polymeric reaction product of a dihydroxy terminated polydimethylsiloxane block copolymer of the general formula


(I)

where n is an integer ranging from about 8 to about 15 and R and R' are divalent polymethylene oxide radicals corresponding to the general formula:


(II)

and


(III)

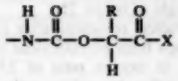
respectively, wherein x is an integer ranging from about 2 to about 8 and y is an integer ranging from about 8 to 15 and wherein the dihydroxy terminated polymethylsiloxane block copolymer has a molecular weight ranging from about 1,600 to 5,500.

4,452,963
LOW TEMPERATURE URETHANE CURING AGENTS

Thomas C. Moriarity, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 10, 1983, Ser. No. 465,702
Int. Cl.³ C08G *18/80*
U.S. Cl. 528—49 **21 Claims**

1. A urethane-containing material having one or more moieties of the structure:



wherein R is hydrogen, an alkyl, alkenyl or aryl group; wherein X is hydrogen, an alkyl, alkenyl or aryl group, or wherein X is a moiety of the structure:

of which R_1 and R_2 are, each independently, hydrogen, an alkyl, alkenyl or aryl group, or members of a cyclic or heterocyclic group.

4,452,964
PEROXIDE CURED URETHANES FOR APPLICATION TO RIM AND ADHESIVES

Jeffrey W. Saracsan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 7, 1983, Ser. No. 464,227
Int. Cl.³ C08G *18/16, 18/30*
U.S. Cl. 528—75 **10 Claims**

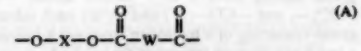
1. A liquefiable peroxide reactive molding composition consisting essentially of a reaction product of a polyol, an organic polyisocyanate and a hydroxyl ethylenic containing compound, said liquifiable composition having a free NCO content of less than about 0.3% by weight and about 0.5 to about 5 parts of an organic peroxide per 100 parts of said composition.

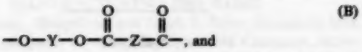
4,452,965
RANDOM ELASTOMERIC COPOLYESTERS

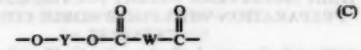
William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 29, 1983, Ser. No. 518,851
Int. Cl.³ C08G *63/66, 63/68*
U.S. Cl. 528—173 **11 Claims**

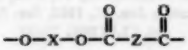
1. A random elastomeric copolyester comprising a multiplicity of recurring long chain and short chain ester units connected head-to-tail through ester linkages, said long chain units being of the formula:


(A)


(B)


(C)

and said short chain ester units being of the formula:



wherein:

W is a divalent radical remaining after removal of terminal carboxyl groups from a dimer acid prepared from an unsaturated fatty acid containing 18 carbon atoms or the monohydric alcohol esters thereof;

X is a divalent radical remaining after removal of hydroxyl

groups from a low molecular weight glycol having a molecular weight of below 250;

Y is a divalent radical remaining after removal of terminal hydroxyl groups from poly(alkylene oxide) glycols having a carbon to oxygen ratio of 2.0–4.3, a molecular weight above 400 and a melting point below 60° C.; and

Z is a divalent radical remaining after removal of terminal methoxy group from 1,2 bis(4-carbomethoxy phenoxy) ethane; with the proviso that the short chain ester units constitute 90–10.5 weight percent of the copolyester.

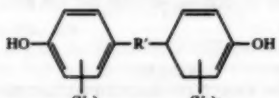
4,452,966

PROCESS FOR THE PRODUCTION OF POLYCARBONATE

Shigeru Matsuo, and Masaaki Itoi, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Apr. 5, 1983, Ser. No. 482,326
Claims priority, application Japan, Apr. 26, 1982, 57-68582
Int. Cl.³ C08G 63/62
U.S. Cl. 528—174 **10 Claims**

1. A process for producing polycarbonate which comprises reacting a chloroformate group-containing polycarbonate oligomer with an aqueous alkaline solution containing a compound having at least three functional groups selected from the group consisting of a hydroxyl group, a carboxyl group, an amino group, an imino group, a formyl group and an acid halide group to thereby obtain a reaction product, and interfacial polycondensing said reaction product with an aqueous alkaline solution containing a dihydric phenol compound, said chloroformate group-containing polycarbonate oligomer being prepared by the reaction of at least one dihydric phenol compound represented by formula (I) or (II) with phosgene,



(I)

(II)

wherein R' is selected from the group consisting of an alkylene group having from 1 to 5 carbon atoms, —O—, —S—, —SO_2—, and —CO—; Y_1 and Y_2 are each selected from the group consisting of a hydrogen atom and a halogen atom; and a and b are each an integer of from 1 to 4.

4,452,967

HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE PREPARATION WITH PHOSPHORUS CONTAINING CATALYST

Anthony B. Conciatori, Chatham; Eui W. Choe, Randolph, both of N.J., and Henry K. Hall, Jr., Tucson, Ariz., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 381,285, May 24, 1982, Pat. No. 4,414,383. This application Jun. 21, 1983, Ser. No. 506,543
Int. Cl.³ C08G 73/18
U.S. Cl. 528—207 **2 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises polymerizing at least one monomeric aromatic compound having a pair of amine substituents in an ortho position relative to each other and a carboxylic acid group positioned on an aromatic nucleus, by heating the monomeric compound above its melting temperature in contact with a phosphorus-containing polymerization catalyst corresponding to the formula:

where R is a radical selected from organic, halide or hydrogen substituents, with the proviso that not more than one R is hydrogen; and Y is an oxygen atom, and n is the integer zero or one.

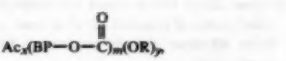
4,452,968

SYNTHESIS OF POLYCARBONATE FROM DIALKYL CARBONATE AND BISPHENOL DIESTER

Donald A. Bolon, and John E. Hallgren, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 325,879, Nov. 30, 1981, abandoned. This application Mar. 25, 1983, Ser. No. 479,049
Int. Cl.³ C08G 63/62
U.S. Cl. 528—271 **4 Claims**

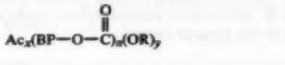
1. A process for producing a polycarbonate resin of the formula



where Ac is an acyloxy radical, BP is the residue obtained by removing the hydroxy groups from a bisphenol, R is an alkyl radical, m is a number greater than 10, x is a number from 0.2 to 1, y is a number from 1.0 to 1.8, and the sum of x and y is 2, comprising the steps of:

A. reacting an alkanol of the formula ROH with carbon monoxide and oxygen to produce a dialkyl carbonate and water, and removing said water;

B. reacting said dialkyl carbonate with a bisphenol diester of the formula $BPAc_2$ in contact with a catalyst to produce an oligomer having the formula



where n is a number from 1 to 4, and an alkyl ester of the formula RAc;

C. separating said alkyl ester and heating it to produce said alkanol and a ketene, and recycling said alkanol to step A;

D. separating said ketene, reacting said ketene with said bisphenol to produce said bisphenol diester, and recycling said bisphenol diester to step B; and

E. heating the oligomer produced in step B in contact with said catalyst to produce said polycarbonate resin.

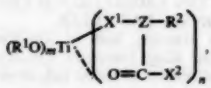
4,452,969

POLY(ALKYLENE DICARBOXYLATE) PROCESS AND CATALYSTS FOR USE THEREIN

Russell J. McCready, Mt. Vernon, Ind., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,434
Int. Cl.³ C08G 63/04, 63/34
U.S. Cl. 528—279 **14 Claims**

1. In a process for preparing poly(alkylene dicarboxylates) by the reaction of at least one dicarboxylic acid or alkyl ester thereof with at least one alkanediol in the presence of a titanium-containing catalyst, the improvement which comprising using as said catalyst a compound having the formula



(I)

wherein:
each R^1 is an alkyl radical having up to about 20 carbon atoms;
X^1 is O or NH;
X^2 is OR^3 when X^1 is NH and is OR^3 or NHR^3 when X^1 is O;
Z is CH or a single-ring aromatic carbocyclic radical in which the $-X^1-$ and

moieties occupy ortho positions;
R^2 is hydrogen or a lower hydrocarbon-based radical;
R^3 is hydrogen, lower alkyl or lower aryl;
n is 1 or 2; and
m is 4−n.

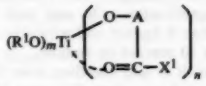
4,452,970

CATALYTIC PROCESS FOR PREPARING POLY(ALKYLENE DICARBOXYLATES) AND CATALYSTS FOR USE THEREIN

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,435
Int. Cl.³ C08G *63/04, 63/34*
U.S. Cl. 528—279 **12 Claims**

1. In a process for preparing poly(alkylene dicarboxylates) by the reaction of at least one dicarboxylic acid or alkyl ester thereof with at least one alkanediol in the presence of a titanium-containing catalyst, the improvement which comprises using as said catalyst a compound having the formula



(I)

wherein each R^1 is an alkyl radical having up to about 20 carbon atoms; A is an aromatic hydrocarbon-based radical in which the —O— and

moieties occupy ortho positions; X^1 is hydrogen, lower alkyl or lower aryl; n is 1 or 2; and m is 4−n.

4,452,971

PRODUCTION OF IMPROVED HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH TIN CONTAINING CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,610
Int. Cl.³ C08G *73/18*
U.S. Cl. 528—336 **23 Claims**

1. A single stage melt polymerization process for the production of high molecular weight polybenzimidazole which comprises preparing a mixture of (1) at least one aromatic tetraamine containing two groups of amine substituents, said amine substituents in each group being in an ortho position relative to each other, (2) at least one dicarboxylic acid, and (3) a tin-containing polymerization catalyst; and heating the mixture above the melting temperature of the mixture.

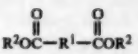
4,452,972

PRODUCTION OF HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ARYL PHOSPHONIC ACID OR ARYL PHOSPHINIC ACID CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,888
Int. Cl.³ C08G *73/18*
U.S. Cl. 528—336 **13 Claims**

1. A two stage polymerization process for the production of high molecular weight polybenzimidazole from a mixture of (1) at least one aromatic tetraamine containing two groups of amine substituents, said amine substituents in each group being in an ortho position relative to each other, and (2) at least one dicarboxylate ester corresponding to the formula:



where R^1 is a substituent selected from aromatic, alkylene or heterocyclic groups, and R^2 is a substituent selected from aliphatic, alicyclic or aromatic groups, which comprises heating the mixture above its melting temperature in a first stage melt polymerization zone in contact with a phosphorus-containing polymerization catalyst selected from arylphosphonic acids or arylphosphinic acids, to provide a foamed prepolymer; and heating the prepolymer in a second stage solid state polymerization zone at a temperature above about 250° C. to produce high molecular weight polybenzimidazole product.

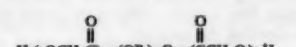
4,452,973

POLY(GLYCOLIC ACID)/POLY(OXYETHYLENE) TRIBLOCK COPOLYMERS AND METHOD OF MANUFACTURING THE SAME

Donald J. Casey, Ridgefield, and Mark S. Roby, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 12, 1982, Ser. No. 441,307
Int. Cl.³ C08G *63/08*
U.S. Cl. 528—354 **13 Claims**

1. A triblock copolymer useful in fiber form for the manufacture of bioabsorbable surgical articles comprising the formula:



wherein R represents an alkylene, x and y have values which correspond to a total polyglycolide content of about 75 to 95 weight percent and a total polyoxyalkylene content of about 5 to 25, weight percent.

4,452,974

PREPARATION OF HEXAMETHYLENEDIAMINE/ADIPIC ACID/DIMER ACID COPOLYAMIDE

Jean Goletto, Ecully, and Jean Coquard, Grezieu la Varenne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 162,491, Jun. 24, 1980, Pat. No. 4,384,111. This application Sep. 24, 1982, Ser. No. 423,088
Claims priority, application France, Jun. 26, 1979, 79 17264
Int. Cl.³ C08G 69/34
U.S. Cl. 528—339.3 14 Claims

1. A process for the preparation of a copolyamide comprising the polycondensation product of adipic acid, fatty acid dimer and hexamethylene diamine, wherein

the molar fraction of adipic acid relative to the total amount of acid and the copolyamide melting point are such that the point obtained by plotting said molar fraction of adipic acid along the abscissa versus the copolyamide melting point along the ordinate falls within the area A B C D outlined on the accompanying FIGURE of Drawing, and wherein

the molar ratio of adipic acid to the total amount of acid in the copolyamide ranges from about 0.5 to 0.99,

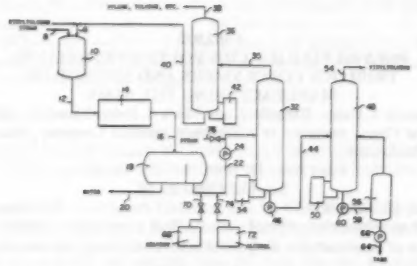
comprising preparing a prepolymer thereof in a heterogeneous medium from a mixture of adipic acid, dimeric acid and hexamethylenediamine, or corresponding salts thereof, thence homogenizing such prepolymer under such conditions that the state of equilibrium of the amidification reaction remains essentially unchanged, and then converting the resulting homogeneous prepolymer into a polycondensate of high molecular weight.

4,452,975

POLYMER MODIFICATION SYSTEM FOR VINYLAROMATIC MONOMER PRODUCTION APPARATUS

James M. Watson; James R. Butler, both of Big Spring, Tex., and Mark Victor, Catonsville, Md., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Mar. 27, 1981, Ser. No. 248,474
Int. Cl.³ C08F 6/00; B08B 3/00
U.S. Cl. 528—493 20 Claims



1. A process for removing insoluble, cross-linked polymer accumulations from apparatus used in the production of vinyltoluene, comprising the steps of:

subjecting the insoluble polymer accumulation to a refluxing, polar non-solvent for the polymer, said non-solvent selected from an alcohol having 1 to 4 carbon atoms or a ketone; and

thereafter expanding the accumulated polymer by subjecting the polymer to steam.

4,452,976

PROCESS FOR PRODUCING AROMATIC POLYESTER POLYCARBONATE PARTICLES

Katsuhisa Kohyama; Akira Matsuno, both of Kita-Kyushu; Teruo Kidera, Fukuoka, and Kenji Tsuruhara, Kita-Kyushu, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed May 20, 1983, Ser. No. 496,510
Claims priority, application Japan, May 27, 1982, 57-90247
Int. Cl.³ C08G 63/64
U.S. Cl. 528—491 14 Claims

1. A process for producing aromatic polyester polycarbonate particles from a methylene chloride solution of an aromatic polyester polycarbonate, which comprises continuously supplying the methylene chloride solution of an aromatic polyester polycarbonate and water to a particle-forming tank wherein water is present in an amount sufficient to form a methylene chloride-in-water suspension, heating the suspension to evaporate methylene chloride and to form aromatic polyester polycarbonate particles, subjecting at least part of the resulting aqueous slurry withdrawn from the particle-forming tank and containing the aromatic polyester polycarbonate particles to pulverization treatment and returning the pulverized aqueous slurry to the particle-forming tank.

4,452,977

PROCESS FOR THE PREPARATION OF POLYMER MELTS WHICH ARE SUBSTANTIALLY FREE OF VOLATILE COMPONENTS

Albert J. H. Brasz, Born; Nicolaas P. Nagtzaam, Sittard, and Cornelis Bronke, Geleen, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jun. 8, 1982, Ser. No. 386,314
Claims priority, application Netherlands, Jun. 17, 1981, 8102930
Int. Cl.³ C08F 6/00, 6/10
U.S. Cl. 528—500 17 Claims

1. A process for the preparation of alkene polymer melts being substantially free of volatile components comprising the steps of:

(a) introducing an alkene polymer melt into a cooled degasification extruder including at least a kneading zone and a subsequent degasification zone, said melt having a melt index of less than 4 dg/min and a volatile component of less than about 10 percent by weight;

(b) cooling said melt in said kneading zone by cooling said kneading zone with a coolant of at most 110° C.; and

(c) cooling said melt subsequent to step (b) in said degasification zone with a coolant having a temperature greater than the temperature of the coolant in said kneading zone.

4,452,978

GRANULAR STARCH ETHERS HAVING REDUCED PASTING TEMPERATURES

James E. Eastman, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 19, 1982, Ser. No. 443,078
Int. Cl.³ C08B 31/08
U.S. Cl. 536—111 26 Claims

1. An improved hydroxypropyl substituted granular starch characterized by (1) a hydroxypropyl substitution level of about 2 to about 9% by weight of starch (dsb), and (2) a pasting temperature reduced from that of the granular starch before hydroxypropyl substitution by at least 6.5° C. for each 1% by weight of hydroxypropyl substitution.

10. A process for preparing an improved hydroxypropyl substituted granular starch characterized by (1) a hydroxypropyl substitution level of about 2 to about 9% by weight of starch (dsb), and (2) a pasting temperature reduced from that of the granular starch before hydroxypropyl substitution by at least 6.5° C. for each 1% by weight of hydroxypropyl substitution, which process comprises reacting ungelatinized granular

starch slurried in a liquid medium comprising a C_1–C_3 alkanol and water, at a level of less than 10% of the liquid medium with propylene oxide under alkaline conditions in a confined zone at a reaction temperature above about 100° C. provided that the water content of the starch slurry, including the water in the starch, is insufficient to swell the granular starch under the reaction conditions.

4,452,979

PROCESS FOR MAKING ENAMINES

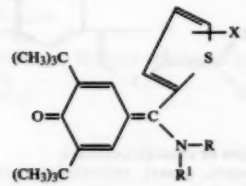
Robert A. Scherrer, White Bear Lake, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 5, 1982, Ser. No. 439,636

Int. Cl.³ C07D *333/20*

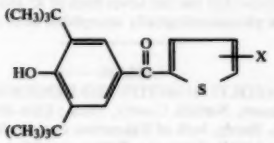
U.S. Cl. 544—58.7 **11 Claims**

1. A process for the preparation of an enamine of the formula

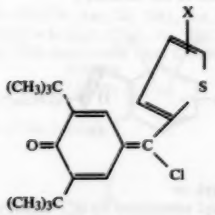


wherein R is lower alkyl; R^1 is selected from the group consisting of lower alkyl, benzyl, and 2-(N,N-dimethylamino)ethyl; or R and R^1 are fused to form an optionally-substituted five- or six-membered heterocyclic ring, and X is hydrogen, methyl or halogen, comprising the steps of

(1) reacting a compound of the formula



wherein X is as defined above, with a chlorine source selected from thionyl chloride and phosphorus pentachloride to provide an intermediate of the formula



wherein X is as defined above, and

(2) reacting the intermediate from step (1) with an amine of the formula

wherein R and R^1 are as defined above, to provide said enamine.

4,452,980

TRIAZINONES

George H. Douglas, Malvern; William L. Studt, Harleysville; Chong M. Won, Warrington; Stuart A. Dodson, Lansdale, and Jerome J. Zalipsky, Melrose Park, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 225,198, Jan. 15, 1981, Pat. No. 4,338,441, which is a division of Ser. No. 959,611, Nov. 13, 1978, Pat. No. 4,246,409. This application Jul. 1, 1982, Ser. No. 394,128

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Int. Cl.³ C07D *251/42, 251/16*

U.S. Cl. 544—211 **1 Claim**

1. 1-(2,6-dimethylphenyl)-4-(dimethylamino)-1,3,5-triazin-2-one or an acid addition salt thereof.

4,452,981

4-(2-FLUORO-4-HALO-5-SUBSTITUTED PHENYL)URAZOLS, AND THEIR PRODUCTION AND USE

Eiki Nagano, Nishinomiya; Shunichi Hashimoto, Osaka; Ryo Yoshida, Kawanishi; Hiroshi Matsumoto, and Katsuzo Kamoshita, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

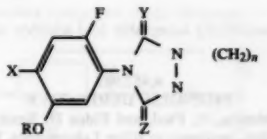
Filed Sep. 15, 1982, Ser. No. 418,426

Claims priority, application Japan, Sep. 19, 1981, 56-148443; Feb. 19, 1982, 57-26512

Int. Cl.³ C07D *487/04, 237/08, 249/12;* A01N *43/64*

U.S. Cl. 544—236 **9 Claims**

1. A condensed phenylurazol of the formula:



wherein X is a chlorine atom or a bromine atom, Y and Z are each an oxygen atom or a sulfur atom and R is a C_1–C_3 alkyl group, an allyl group or a propargyl group and n is 4.

4,452,982

PROCESS FOR THE PREPARATION OF NITROGEN-BRIDGEHEAD CONDENSED PYRIMIDINE COMPOUNDS, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Istvan Hermecz; Tibor Breining; Lelle Vasvári née Debreczy; Ágnes Horvath, all of Budapest, and József Kökösi, Budaörs, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

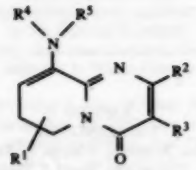
Filed May 9, 1980, Ser. No. 148,238

Claims priority, application Hungary, May 11, 1979, CI 1933

Int. Cl.³ C07D *239/70;* A61K *31/505*

U.S. Cl. 544—282 **8 Claims**

1. A process for the preparation of a compound of the formula (I)



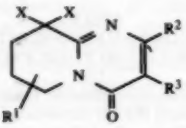
wherein

R^1 and R^2 are each hydrogen or lower alkyl;

R^3 is carboxy, lower alkoxycarbonyl, carbamoyl, carbamoyl substituted by one or two lower alkyl groups, or cyano;

R^4 is hydrogen, lower alkyl, phenyl, naphthyl, phenyl or naphthyl substituted by at least one fluoro, chloro, bromo, iodo, lower alkyl, lower alkoxy, hydroxy, carboxy, or phenyl, pyridyl or tetrazolyl; and

R^5 is hydrogen or lower alkyl; or a pharmaceutically acceptable salt, hydrate, stereoisomer, optically active isomer, geometric isomer, or tautomer thereof, which comprises the step of aminating a racemic or optically active compound of the formula (II)



wherein

X is halogen with a compound of the formula (III)

or a pharmaceutically acceptable acid addition salt thereof.

4,452,983

PHENOLIC DERIVATIVE

James D. Johnson, St. Paul, and Elden H. Banitt, Woodbury, both of Minn., assignors to Riker Laboratories, Inc., St. Paul, Minn.

Continuation of Ser. No. 271,254, Jun. 8, 1981, abandoned. This application Nov. 5, 1982, Ser. No. 439,637

Int. Cl.³ C07D *211/26*

U.S. Cl. 546—233 **2 Claims**

1. Synthetic 5-hydroxy-2-(2,2,2-trifluoroethoxy)-N-(2-piperidylmethyl)benzamide or a pharmaceutically acceptable salt thereof.

2. Substantially pure 5-hydroxy-2-(2,2,2-trifluoroethoxy)-N-(2-piperidylmethyl)benzamide or a pharmaceutically acceptable salt thereof.

4,452,984

OPTICALLY ACTIVE NICOTINE ANALOGS AND PROCESS FOR THEIR PREPARATION

William B. Edwards, III, Richmond, Va., assignor to Philip Morris, Inc., New York, N.Y.

Division of Ser. No. 229,481, Jan. 29, 1981, Pat. No. 4,332,945. This application May 13, 1982, Ser. No. 377,989

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—281 **8 Claims**

1. Optically pure S-(−)-2-(3-pyridyl)-1,4,4-trimethylpyrrolidine.

3. Optically pure 2S,4S-(−)-1,4-dimethyl-2-(3-pyridyl)pyrrolidine.

7. Optically pure S-(−)-5-(3-pyridyl)-1,3,3-trimethyl-2pyrrolidinone.

4,452,985

2-GUANYL-4-(SUBSTITUTED PHENYL) THIAZOLE DERIVATIVES

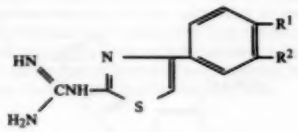
Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia; Robert L. Morris, Devon, and Stanley C. Bell, Penn Valley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 466,239

Int. Cl.³ C07D *277/46*; A61K *31/425*

U.S. Cl. 548—131 **9 Claims**

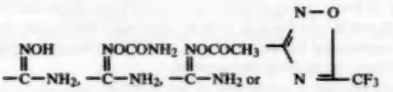
1. A compound having the formula:



wherein

R^1 is hydrogen or cyano(lower)alkyl;

R^2 is hydrogen, guanyl, (lower)alkoxyimino, (lower)alkylaminoimino,



with the proviso that one but never both of R^1 and R^2 is hydrogen; and the pharmacologically acceptable salts thereof.

4,452,986

IMIDAZOLYL-SUBSTITUTED BENZOFURANS

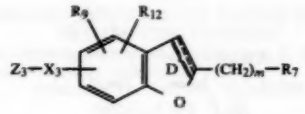
Roy A. Johnson, Norfolk County, Mass.; Chiu-Hong Lin, and Gordon L. Bundy, both of Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,620, Jun. 8, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 430,295

Int. Cl.³ C07D *405/06*

U.S. Cl. 548—336 **7 Claims**

1. A compound of the formula I



I

wherein Z_3 is

(a) 1-imidazolyl, or

(b) 1-imidazolyl substituted by $(C_1–C_3)$alkyl;

wherein X_3 is

(a) $—(CH_2)_n—$,

(b) —C(OH)—, or

(c) —C(O)—;

with the proviso that when X_3 is $—(CH_2)_n—$, Z_3 is 1-imidazolyl substituted by $(C_1–C_3)$alkyl and Z_3X_3 is attached to the 4-position of the benzofuran, and n is not zero,

wherein R_1 is hydrogen, a pharmacologically acceptable cation, $(C_1–C_{12})$ alkyl, $(C_3–C_{10})$ cycloalkyl, $(C_7–C_{12})$ aralkyl, phenyl, phenyl mono-, di-, or trisubstituted by chloro, $(C_1–C_3)$ or alkyl, or phenyl para-substituted by

(a) —NHCO—R_{25},
(b) —O—CO—R_{26},
(c) —CO—R_{24},
(d) —O—CO—(p-Ph)—R_{27}, or
(e) —CH=N—NH—CO—NH_2,

wherein R_{24} is phenyl or acetamidophenyl, R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; and R_{27} is hydrogen or acetamido, and wherein —(p-Ph) is 1,4-phenylene;

wherein R_4 is
(a) hydrogen,
(b) (C_1–C_4)alkyl, or
(c) phenyl;

wherein R_7 is
(a) hydrogen,
(b) —CH_2OH,
(c) —$COOR_1$,
(d) —$CH_2N(R_4)_2$,
(e) —CN
(f) —$CON(R_4)_2$, or
(g) —C(O)—R_4;

wherein R_9 and R_{12} are the same or different and are
(a) hydrogen,
(b) (C_1–C_4)alkyl
(c) fluoro,
(d) chloro,
(e) bromo,
(f) —OCH_3, or,
(g) when taken together and attached to contiguous carbon atoms, —O—CH_2—O—;

wherein D represents a single or a double bond; and

wherein m and n are the same or different and are the integers 0 to 4, inclusive; or a pharmacologically acceptable acid addition salt thereof; or

when D represents a single bond, an enantiomer or a racemic mixture of enantiomers thereof.

4,452,987

HALOACETYL IMIDAZOLES

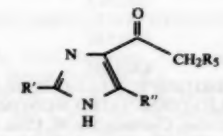
John L. LaMattina, Ledyard, and Christopher A. Lipinski, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 293,574, Aug. 20, 1981, Pat. No. 4,374,843, which is a continuation-in-part of Ser. No. 196,231, Oct. 14, 1980, abandoned. This application Dec. 13, 1982, Ser. No. 449,129

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—343 **5 Claims**

1. A compound of the formula



or an acid addition salt thereof, wherein R′ is hydrogen, hydroxymethyl, alkyl of 1 to 6 carbon atoms or —$(CH_2)_n$Ar, wherein n is an integer from 2 to 4; R″ is hydrogen or methyl; and Ar is phenyl or phenyl monosubstituted with chloro, bromo, fluoro, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms; and R_5 is halo.

4,452,988

1-ETHENYL-6-(4-PHENYL)-3,4,9,9A-TETRAHYDRO-9A-METHYL-6H-NAPTHO[2,3-c]PYRAZOLES

Malcolm R. Bell, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

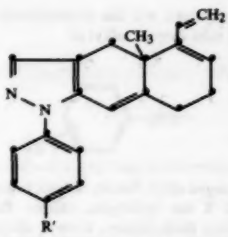
Filed Dec. 6, 1982, Ser. No. 447,010

The portion of the term of this patent subsequent to Sep. 14, 1999, has been disclaimed.

Int. Cl.³ C07D *231/54*

U.S. Cl. 548—369 **3 Claims**

1. A compound having the formula



wherein R′ is hydrogen or fluoro.

4,452,989

SUBSTANTIVE MOISTURIZING DERIVATIVES OF 2-PYRROLIDONE-5-CARBOXYLIC ACID AND COMPOSITIONS CONTAINING SAME

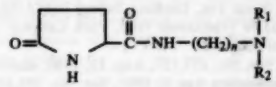
George E. Deckner, Westfield; Hedwig O'Grady, Holmdel, and Albert Zofchak, Matawan, all of N.J., assignors to Charles of the Ritz Group Ltd., New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 384,137

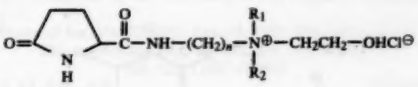
Int. Cl.³ C07D *207/28*

U.S. Cl. 548—537 **5 Claims**

1. A moisturizing compound of the structure



wherein n is 1 to 8 and R_1 and R_2 are the same or different and are lower alkyl or aralkyl, in the form of its amine oxide, betaine or quaternary ammonium salt having the structure



4,452,990

1-AROYL-5-OXO-2-PYRROLIDINEPROPANOIC ACIDS AND RELATED ESTERS

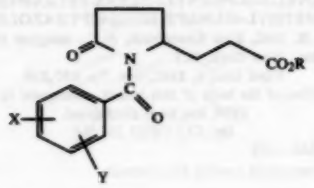
Donald E. Butler, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 15, 1982, Ser. No. 441,335

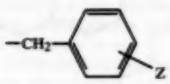
Int. Cl.³ C07D *207/273*; A61R *31/40*

U.S. Cl. 548—543 **20 Claims**

1. A compound of the formula



wherein R is hydrogen and the pharmaceutically acceptable metal or amine salts thereof, alkyl or



where Z is hydrogen alkyl, fluoro, chloro, bromo, or trifluoromethyl; X and Y are hydrogen, chloro, fluoro, hydroxy, amino, alkylamino, dialkylamino, methyl, alkoxy having from one to six carbon atoms or benzyloxy; wherein X and Y may be the same or different with the proviso that when R is hydrogen, or a pharmaceutically acceptable metal or amine cation, X is a substituent other then hydrogen.

4,452,991

FLAVAN DERIVATIVES USEFUL FOR IMPAIRING RNA VIRUS REPLICATION IN A CELL

John F. Batchelor, 10 Wilton Pl., Beckenham, Kent; Jeremy G. Vinter, 76 South Ter., Dorking, Surrey RH42AQ, and Harold F. Hodson, 69 Whitecroft Way, Park Langley, Beckenham, Kent, all of England

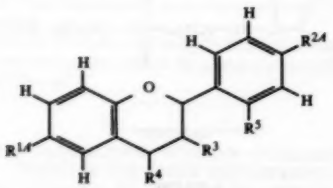
Division of Ser. No. 177,127, Aug. 11, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 302,109

Claims priority, application United Kingdom, Sep. 13, 1979, 7931841

Int. Cl.³ C07D 311/60, 311/78

U.S. Cl. 549—383 **8 Claims**

1. A compound of formula (IA)



(IA)

wherein R^4 is a hydrogen atom or a lower alkyl group and R^3 is a hydrogen atom or a lower alkyl group and R^5 is hydrogen or R^3 and R^5 together form a group $—CH_2—$ or $—CH_2—CH_2—$ and R^{1A} and R^{2A} are the same or different and are selected from halogen atom, cyano, and trifluoromethyl groups; provided that at least one of R^3 and R^4 is other than hydrogen.

4,452,992

PROCESS FOR THE PRODUCTION OF ETHOXYCARBONYLMETHYL 5-(2,6-DICHLORO-4-TRIFLUORO-METHYLPHENOXY)-2-NITRO-α-PHENOXY-PROPIONATE

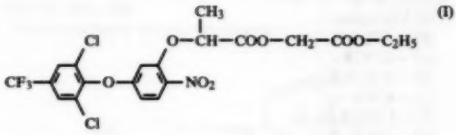
Hans P. Sehnem, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 13, 1983, Ser. No. 457,774

Int. Cl.³ C07C 79/46

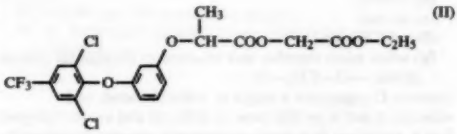
U.S. Cl. 560—21 **5 Claims**

1. A process for the production of ethoxycarbonylmethyl 5-(2,6-dichloro-4-trifluoromethyl-phenoxy)-2-nitro-α-phenoxy-propionate of the formula



(I)

which process comprises reacting exthoxycarbonylmethyl 3-(2,6-dichloro-4-trifluoromethyl-phenoxy)-α-phenoxypropionate of the formula



(II)

is reacted with nitric acid in the presence of sulphuric acid and in the presence of 1,2-dichloroethane at a temperature between −20° C. and +50° C.

4,452,993

ANISOTROPIC HEAT-CURABLE ACRYLIC-TERMINATED MONOMERS

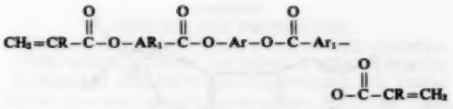
Anthony B. Conciatori, Chatham; Eui W. Choe, Randolph, and Gerald Farrow, New Providence, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed May 24, 1982, Ser. No. 381,598

Int. Cl.³ C07C 69/76

U.S. Cl. 560—66 **16 Claims**

1. Heat-curable acrylic-terminated monomers capable of forming an anisotropic melt phase of the formula:



wherein Ar is a divalent radical comprising at least one aromatic ring, Ar_1 is a divalent radical selected from the group consisting of phenylene, naphthylene, biphenylene and mixtures thereof and R is selected from the group consisting of hydrogen and methyl, with at least some of the hydrogen atoms present upon the aromatic rings in said divalent radicals optionally being replaced by substitution selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, substituted phenyl and mixtures thereof.

4,452,994

PROCESS FOR ISOLATING ORGANIC COMPOUNDS AND LITHIUM SALT COMPLEXES USEFUL IN SAID PROCESS

John B. Hill, Woodstock, and Robert A. Erickson, Des Plaines, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Mar. 2, 1981, Ser. No. 239,822
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **7 Claims**

1. The process for isolating an 11,16 or 11,15 dihydroxy prostaglandin from a reaction mixture or crude mixture containing such dihydroxy prostaglandin which comprises dissolving said reaction mixture or crude mixture in a non-hydroxylic organic solvent, contacting the resultant solution with a lithium salt selected from the group comprising lithium bromide, lithium iodide, lithium perchlorate, and lithium fluoroborate in a concentration from about 1 mole to about 10 moles of said lithium salt per mole of product to form a solid complex, separating the complex, and decomposing the complex to recover purified dihydroxy prostaglandin.

4,452,995

DIALKOXYCARBONYLMETHYLENEURETHANE DIYNES

Gordhanbhai N. Patel, Somerset, N.J., assignor to Allied Corporation, Morris Township, N.J.

Division of Ser. No. 938,292, Aug. 30, 1978. This application Apr. 2, 1982, Ser. No. 364,590
Int. Cl.³ C07C *125/073*
U.S. Cl. 560—166 **6 Claims**

1. A compound of the formula: R—C≡C—C≡C—R′, wherein R and R′ are independently selected from the formula: $—(CH_2)_n—O—CONH—CH_2—CO—OA$, wherein n is an integer value of 1 to 10 and A is C_1–C_{10} linear or branched alkyl.

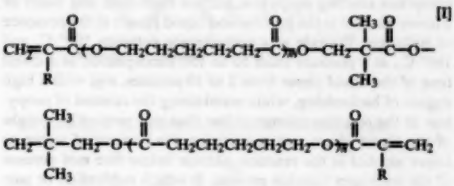
4,452,996

DI(METH)ACRYLATE ESTERS OF HYDROXYPIVALYL HYDROXYPIVALATE ε-CAPROLACTONE CONDENSATES

Minoru Yokoshima, Yamaguchi; Kazuyoshi Nawata, Onoda; Tetsuo Hironaka, Ube, and Hideaki Takahashi, Yamaguchi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Japan

Filed Jan. 27, 1983, Ser. No. 461,640
Claims priority, application Japan, Feb. 13, 1982, 57-20687
Int. Cl.³ C07C *69/675, 69/73*
U.S. Cl. 560—185 **5 Claims**

1. Di(meth)acrylate esters of the formula [I]:



[I]

wherein m and n each represents 0 or an integer of 1 to 3, the average sum of m+n being 1 to 6, and R represents hydrogen or a methyl group.

4,452,997

PROCESS FOR THE PREPARATION OF POLYESTER POLYOLS AND/OR POLYESTER-POLYETHER POLYOLS

Matthias Marx, Bad Durkheim, and Wolfgang Strachle, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 23, 1982, Ser. No. 452,411
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201203
Int. Cl.³ C07C *67/26*
U.S. Cl. 560—200 **7 Claims**

1. A process for the preparation of polyester-and/or polyester-polyether polyols by reaction of a polyol with a carboxylic acid anhydride forming carboxylic acid half esters and subsequently oxyalkylating the carboxylic half esters with alkylene oxides in the presence of a catalytic amount of at least one thiodialkylene glycol.

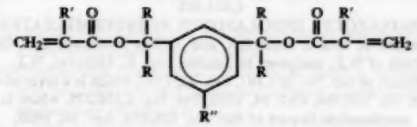
4,452,998

FLUORINATED DIACRYLIC ESTERS

James R. Griffith, Riverdale, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 237,838, Feb. 25, 1981, Pat. No. 4,356,296. This application Aug. 6, 1982, Ser. No. 405,772
Int. Cl.³ C07C *69/653*
U.S. Cl. 560—221 **5 Claims**

1. A fluorodiacrylate ester represented by the formula:



wherein R represents CF_3 or C_2F_5, R′ represents —H or $—CH_3$, R″ represents H or $—(CF_2)_nF$, and n is an integer from 1 to 10.

4,452,999

METHOD FOR MAKING ISOBUTYRIC ACID

Siegmund Besecke, Darmstadt; Guenter Schroeder, Ober-Ramstadt; Hermann-Josef Siegert, and Wolfgang Gaenzler, both of Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 215,523, Dec. 11, 1980, abandoned. This application May 21, 1982, Ser. No. 380,609

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951289; Sep. 6, 1980, 3033655

Int. Cl.³ C07C 51/14, 67/38

U.S. Cl. 560—233 9 Claims

1. A continuous one-step method for the preparation of isobutyric acid or a lower alkyl ester thereof, which method comprises reacting propylene, carbon monoxide, and water or a lower alcohol in the gaseous and liquid phases in the presence of hydrogen fluoride at a temperature between 100° C. and 160° C., at a pressure from 50 to 150 atmospheres, at a dwell time of the liquid phase from 2 to 10 minutes, and with a high degree of backmixing, while maintaining the content of propylene in the reaction mixture at less than one percent by weight of the liquid phase and maintaining the content of water or lower alcohol in the reaction mixture below five mol percent of the hydrogen fluoride present, in which method all or part of the propylene, carbon monoxide, and water or lower alcohol can be replaced by binary addition compounds formed pairwise between these materials.

4,453,000

TRICYCLIC COMPOUNDS AND USE THEREOF AS PERFUME INGREDIENTS

Karl-Heinrich Schulte-Elte, Onex, and Herve Pamingle, Geneva, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland

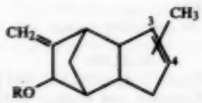
Continuation-in-part of Ser. No. 265,998, May 21, 1981. This application May 19, 1983, Ser. No. 496,002

Claims priority, application Switzerland, May 27, 1981, 4088/80

Int. Cl.³ C07C 67/02, 35/22; C11B 9/00; A61K 7/46, 7/06

U.S. Cl. 560—256 7 Claims

1. A compound of formula



(I)

possessing a methyl radical at positions 3 or 4 and wherein symbol R represents a lower acyl radical.

4,453,001

ISOXAZOLYL INDOLAMINES AS INTERMEDIATES

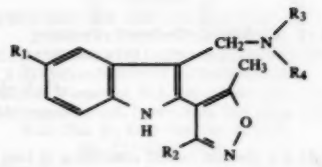
Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 351,187, Feb. 22, 1982, which is a division of Ser. No. 196,784, Oct. 14, 1980, Pat. No. 4,336,378, which is a continuation-in-part of Ser. No. 138,873, Apr. 10, 1980, abandoned. This application Aug. 22, 1983, Ser. No. 524,995

Int. Cl.³ C07D 261/06, 209/04

U.S. Cl. 548—466 3 Claims

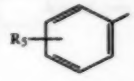
1. A compound of the formula



wherein

R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms,

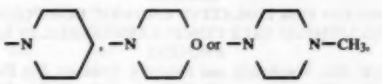
R_2 represents lower alkyl having 1 to 4 carbon atoms, or



where R_5 represents hydrogen, fluoro, chloro, lower alkyl as defined above or lower alkoxy as defined above, and

R_3 and R_4 each independently represent lower alkyl as defined above, or

R_3 and R_4 together with N represent



or a pharmaceutically acceptable acid addition salt thereof.

4,453,002

FORMALDEHYDE CONDENSATES AND THEIR PREPARATION

Werner Maurer; Johann Zimmer, both of Leverkusen, and Artur Haus, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 195,904, Oct. 10, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 425,038

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2944090

Int. Cl.³ C07C 147/107; C08G 8/24

U.S. Cl. 562—429 10 Claims

1. A condensation product of formaldehyde; di-hydroxyaryl sulphone; optionally a phenol selected from the group consisting of phenol, cresol, chlorophenol, dihydroxybenzenes, p-hydroxydiphenyl and o-hydroxydiphenyl; and hydroxyarylcarboxylic acid selected from the group consisting of p-hydroxybenzoic acid, o-cresotic acid and salicylic acid, the molar ratio of formaldehyde:di-hydroxyaryl sulphone:phenol:-hydroxyarylcarboxylic acid being 0.6–1.8:0.1–0.3:0–0.4:1, the product being prepared in the absence of additional acids in a one-stage reaction at a pH between about 2 and 5.

4,453,003

PROCESS FOR PRODUCING THREO-3-AMINO-2-HYDROXY-BUTANOYL-AMINOACETIC ACIDS AS WELL AS NOVEL INTERMEDIATES THEREFOR AND PROCESS FOR PRODUCING THEM

Hamao Umezawa, No. 4-23, Toyotama-Kita, Nerima-ku, Tokyo; Takaaki Aoyagi, No. 3-3-6, Honkugenuma, Fujisawa-shi, Kanagawa-ken; Tadashi Shirai, No. 1-24-4, Naka-cho, Musashino-shi, Tokyo; Rinzo Nishizawa, No. 3-18-16, Sugano, Toshima-ku, Tokyo; Masao Suzuki, No. 2-28-36, Honan, Suginami-ku, Tokyo, and Tetsushi Saino, No. 1039, Kamiochiai, Yono-shi, Saitama-ken, all of Japan

Division of Ser. No. 211,035, Nov. 28, 1980, Pat. No. 4,391,986, which is a division of Ser. No. 96,693, Nov. 23, 1979, Pat. No. 4,281,180. This application Dec. 31, 1981, Ser. No. 336,492

Claims priority, application Japan, Nov. 25, 1978, 53-145509; Dec. 13, 1978, 53-153157

Int. Cl.³ C07C *101/30*

U.S. Cl. 562—448 1 Claim

1. (2S,3R)-3-amino-2-hydroxy-4-(4-methoxyphenyl)-butanoyl-(S)-leucine.

4,453,004

PROCESS FOR THE ALKYLATION OF PHENOLIC COMPOUNDS

Randall B. Nelson, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,325

Int. Cl.³ C07C *51/347, 45/61, 41/16*

U.S. Cl. 562—473 21 Claims

1. A process for the melt phase preparation of an alkylated phenolic ether comprising

heating a phenolic compound to a temperature of at least its melting point and

reacting said melted phenolic compound with an alkylating agent selected from the group consisting of an alkyl ester and an alkyl halide in the absence of a solvent and in the presence of a base catalyst at a temperature of at least the melting point of the phenolic compound until an alkylated phenol ether is produced.

4,453,005

PROCESS FOR PREPARING SUBSTITUTED PHENYLALKENOIC ACIDS

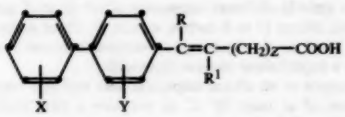
Patrice C. Belanger, Dollard des Ormeaux; Claude Dufresne, Lachine; John W. Gillard, Pointe Claire, and Haydn W. R. Williams, Dollard des Ormeaux, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Dec. 6, 1982, Ser. No. 446,910

Int. Cl.³ C07C *63/33*

U.S. Cl. 562—492 10 Claims

1. A process for preparing compounds having the formula



I

wherein

R is H or C_1–C_4 alkyl, C_1–C_4 alkoxy or hydroxy

R^1 is H or C_1–C_4 alkyl, C_1–C_4 alkoxy or hydroxy

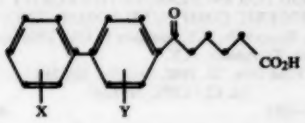
Y is H, halo, hydroxy, C_1–C_4 alkoxy or azide,

X is H, halo, hydroxy, C_1–C_4 alkoxy or azide, and

Z is 3, 5 or 7,

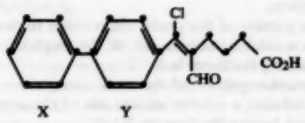
which comprises the steps of:

(1) reacting a compound of the formula:



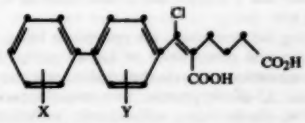
a

with an oxyhalide in dimethylformamide to obtain a compound of the formula:



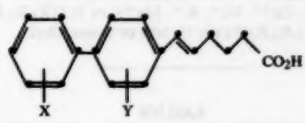
b

(2) oxiding b to obtain a compound of the formula:



c

(3) dehydrohalogenating and decarboxylating the c compound to obtain a compound of the formula:



G

and

(4) hydrogenating G to obtain the formula I compound.

4,453,006

OXIDATION OF PROPYLENE OR ISOBUTYLENE WITH ATTRITION RESISTANT CATALYSTS

Wilfrid G. Shaw, Lyndhurst; Christos Paparizos, Cleveland, and James L. Callahan, Wooster, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 76,115, Sep. 17, 1979, Pat. No. 4,280,929. This application Feb. 12, 1981, Ser. No. 233,742

Int. Cl.³ C07C *45/35, 47/22, 51/25, 57/05*

U.S. Cl. 562—545 3 Claims

1. In the process for the preparation of unsaturated aldehydes and acids from propylene or isobutylene by the vapor phase oxidation of propylene or isobutylene with molecular oxygen and nitrogen at a temperature of about 200°–600° C. in the presence of a supported solid oxide complex catalyst the improvement comprising preparing said catalyst by the steps of:

(a) adding fumed silica to a mixture containing one or more active components of the catalyst;

(b) drying and calcining said mixture to form a calcined first-stage mixture; said calcination occurring between the temperature of 200°–700° C.

(c) adding in solution a member having a surface area greater than 50 m^2/g selected from the group of silica and a silica-containing compound other than fumed silica to said calcined mixture of (b);

(d) drying said mixture of (c).

4,453,007

METHOD FOR INCREASING THE PURITY OF AMPHOTERIC COMPOUND COMPOSITIONS

David Taube, Bronxville, N.Y., assignor to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Nov. 23, 1981, Ser. No. 324,340
Int. Cl.³ C07C 149/243
U.S. Cl. 562—554 4 Claims

1. A method for increasing the purity of amphoteric compound compositions containing non-amphoteric impurities, said method comprising:

(a) providing an amount of a crude amphoteric compound composition;

(b) using a portion of the crude composition to prepare in solution a soluble cationic salt of the amphoteric compound having the formula X^+Z^-;

(c) using another portion of the crude composition to prepare in solution a soluble anionic salt of the amphoteric compound having the formula Y^+X^-;

(d) mixing together the solution containing the anionic salt and the solution containing the cationic salt, wherein a precipitate and a soluble salt of the formula Y^+Z^- is formed; and

(e) collecting the precipitate, the precipitate being amphoteric compound composition of higher purity than the crude composition, wherein the amphoteric compound is phenigam, 3,5-diiodotyrosine, para-aminohippuric acid, terbutaline, theobromine, sulfathiazole, sulfadiazin, sulfanilylurea, carbocysteine, aspartame, or methyldopa,

wherein X^+ is the cation of the amphoteric compound, Z^- is Cl^-, Br^-, I^-, ClO_4^-, or SO_4^{-2};

X^- is the anion of the amphoteric compound; and

Y^+ is Li^+, Ca^{+2}, Na^+, K^+, Mg^{+2}, or $N^+(R_1,R_2,R_3,R_4)$;

wherein R_1,R_2,R_3,R_4 are H, aryl or lower alkyl.

4,453,008

PRODUCTION PROCESS OF DL-CYSTEIN

Ryuichi Mita, Kawasaki; Masaharu Ohoka, Yokohama; Chojiro Higuchi, Kamakura; Toshio Katoh, Kawasaki; Nobuyuki Kawashima; Akihiro Yamaguchi, both of Kamakura; Shousuke Nagai, Yokohama, and Takao Takano, Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP82/00198, 371 Date Jan. 14, 1983, 102(e) Date Jan. 18, 1983, PCT Pub. No. WO82/04251, PCT Pub. Date Dec. 9, 1982
PCT Filed May 26, 1982, Ser. No. 459,533
Claims priority, application Japan, Jun. 1, 1981, 56-82453
Int. Cl.³ C07C 149/247
U.S. Cl. 562—557 7 Claims

1. A process for producing DL-cystein, which process comprises reacting a β-halogenoalanine with a trithiocarbonate and then subjecting the resulting mono(aminocarboxyethyl) ester of trithiocarbonate to acid decomposition.

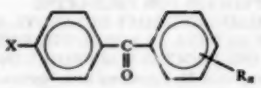
4,453,009

PROCESS FOR PRODUCING FLUOROBENZOPHENONE DERIVATIVES

Akihiro Yamaguchi, Kamakura; Keizaburo Yamaguchi, Kawasaki; Kenichi Sugimoto, and Yoshimitsu Tanabe, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

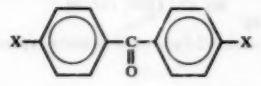
Filed Oct. 8, 1982, Ser. No. 433,438
Int. Cl.³ C07C 49/80
U.S. Cl. 568—316 5 Claims

1. A process for producing 4-fluorobenzophenone derivatives or 4,4'-difluorobenzophenone which comprises reacting 4-halogenobenzophenone derivatives of Formula I,



I

wherein X is chlorine, bromine, or iodine atom, R is hydrogen, an alkyl group, an aralkyl group, a cycloalkyl group, an aryl group, an alkoxyl group, an aryloxyl group, an alkylthio group, a carboalkoxyl group, an acetyl group, a trifluoromethyl group, a nitro group or halogen atom provided that the halogen is substituted on other positions than 4'-position, n is an integer of 1-5 and when n is 2 or more, R is the same or different or 4,4'-dihalogenobenzophenone of Formula II



II

wherein X is a chlorine, bromine or iodine atom and an alkali fluoride selected from the group consisting of lithium fluoride, potassium fluoride, sodium fluoride, rubidium fluoride and cesium fluoride.

4,453,010

PRODUCTION OF HYDROXY ARYLOPHENONES

Philip A. Staniland, Tewin Wood, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jan. 20, 1982, Ser. No. 341,182
Claims priority, application United Kingdom, Feb. 4, 1981, 8103438
Int. Cl.³ C07C 45/46
U.S. Cl. 568—319 15 Claims

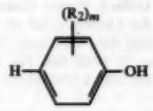
1. A process for the production of a hydroxy arylophenone which comprises reacting substantially stoichiometric proportions of

(i) an aromatic carboxylic acid of formula

$$AR(-CO_2H)_p$$

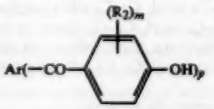
where Ar is an aromatic radical, ($-CO_2H$) is an aromatically bound carboxylic acid group, and p is an integer of 1 or 2, with

(ii) an aromatic compound of formula



where m is 0, 1, or 2, and R_2 which may be the same or when (m=2) different represents alkyl (1 to 5 carbon atoms), alkoxy (1 to 5 carbon atoms), F, Cl, or a benzene ring fused to the hydroxyl-substituted benzene ring to form a naphthalene nucleus therewith,

in the presence of an alkane sulphonic acid and at a reaction temperature of at least 50° C. to produce a para hydroxy arylophenone of the formula



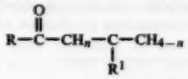
4,453,011

PROCESS FOR THE PREPARATION OF α,β-AND β,γ-UNSATURATED KETONES

Karl H. Schulte-Elte, Onex; Roger L. Snowden, Grand-Lancy, and Bernard L. Muller, Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

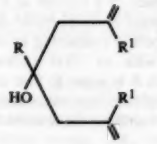
Filed Aug. 6, 1982, Ser. No. 405,989
Claims priority, application Switzerland, Aug. 14, 1981, 5261/81
Int. Cl.³ C07C 45/51
U.S. Cl. 568—322 4 Claims

1. A process for the preparation of α,β- and β,γ-unsaturated ketones of formula



(II)

having a double bond in one of the positions indicated by the dashed lines and wherein symbol R designates a primary, a secondary or a tertiary alkyl radical, or a substituted or unsubstituted phenyl radical, and wherein symbol R^1 represents a hydrogen atom or an alkyl radical and index n stands for integer 1 or 2, which comprises treating with at least a stoiciometric amount of a strong base in an inert organic solvent a diallyl carbinol of formula



(I)

wherein symbols R and R^1 have the meaning indicated above.

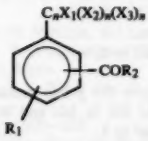
4,453,012

PROCESS FOR THE PREPARATION OF PHENYL KETONES

Michel Desbois, Rillieux, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

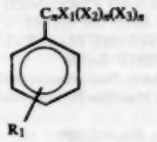
Filed Jun. 28, 1982, Ser. No. 393,056
Claims priority, application France, Apr. 22, 1982, 82 6904
Int. Cl.³ C07C 45/43
U.S. Cl. 568—323 8 Claims

1. A process for the preparation of phenyl ketones having the formula:



comprising the steps of:

(a) reacting a halobenzene or a trihalomethylbenzene having the formula:



(I)

in a reaction vessel with a trihalomethylated aliphatic or aromatic compound having the formula:

$$R_2CX_4X_5X_6 \qquad \text{(II)}$$

in the presence of boron trifluoride in an amount such that the absolute pressure of boron trifluoride within the reaction vessel exceeds 1 bar and in the presence of hydrofluoric acid as a solvent; and

(b) hydrolyzing the resultant product;

wherein

n is 0 or 1;

X_1, X_2, and X_3 are Cl, Br, I, or F;

R_1 is at least one element or moiety selected from the group consisting of hydrogen, OH, Cl, Br, I, F, alkyl and alkoxy radicals having from 1 to 6 carbon atoms, and phenyl and phenoxy radicals substituted by at least one group more deactivating than $C_nX_1(X_2)_n(X_3)_n$;

R_2 is an aliphatic or aromatic radical; and

X_4, X_5, and X_6 are Br, Cl, or F.

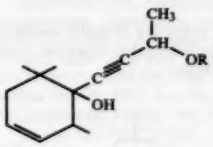
4,453,013

PROCESS FOR PREPARING NOVEL ACETYLENIC COMPOUNDS USEFUL AS STARTING MATERIALS FOR PREPARING AN ALICYCLIC KETONE

Peter Fankhauser, Onex, Switzerland, assignor to Firmenich, S.A., Geneva, Switzerland

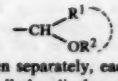
Division of Ser. No. 198,250, Oct. 17, 1980, Pat. No. 4,324,729.
This application Nov. 19, 1981, Ser. No. 322,747
Claims priority, application Switzerland, Oct. 24, 1979, 9526/79
Int. Cl.³ C07C 45/00
U.S. Cl. 568—361 5 Claims

1. Process for preparing β-damascenone, which consists essentially of treating a compound of formula



(I)

wherein symbol R represents a hydrogen atom, a trialkylsilyl radical or a group of formula



(II)

wherein, when taken separately, each of symbols R^1 and R^2 represents a lower alkyl radical or, when taken together, R^1 and R^2 represent a tetramethylene group with an acidic agent.

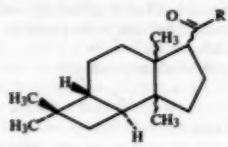
4,453,014

PERFUME COMPOSITIONS AND PERFUMED ARTICLES CONTAINING ONE OR MORE TETRAMETHYL-TRI-CYCLOUNDECYL-ALKYL KETONES AS PERFUME BASE

Antonius J. A. Van der Weerdt, Huizen, Netherlands, assignor to Naarden International N.V., Ca Naarden-Bussum, Netherlands

Filed Sep. 13, 1982, Ser. No. 417,206
Claims priority, application Netherlands, Sep. 16, 1981, 8104273
Int. Cl.³ C07C 49/115
U.S. Cl. 568—373 4 Claims

1. Isomers of 9-alkanoyl-1.4.4.8-tetramethyl-tricyclo[6.3.0.$0^{2,5}$]undecanes having formula 1,



(1)

wherein R is methyl, ethyl or n-propyl.

4,453,015

METHYL ETHYL KETONE PROCESS

Lynn H. Slaugh; Galeon W. Schoenthal, and James D. Richardson, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 312,054, Oct. 16, 1981, abandoned.
This application Dec. 9, 1982, Ser. No. 448,129
Int. Cl.³ C07C 45/00
U.S. Cl. 568—406 14 Claims

1. A process for converting sec-butyl alcohol to methylethyl ketone which comprises contacting the alcohol at a temperature ranging from about 200° C. to about 500° C. with a catalyst consisting essentially of copper, zinc and chromium supported on a porous alpha alumina support, wherein the copper measured as the metal ranges from about 0.1 to about 20 percent by weight of the total catalyst, the zinc ranges from about 0.1 to about 10 percent by weight of the total catalyst and the chromium ranges from about 0.01 to about 10 percent by weight of the total catalyst.

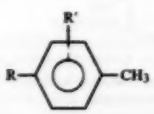
4,453,016

PREPARATION OF AROMATIC ALDEHYDES

Andrew T. Au, Needham, and Chu W. Jung, Arlington, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 7, 1982, Ser. No. 415,079
Int. Cl.³ C07C 45/36
U.S. Cl. 568—432 9 Claims

1. A process for preparing aromatic aldehydes comprising contacting a methyl-substituted aromatic compound corresponding to the formula:



wherein R is hydroxyl or C_{1-4} alkoxy, R′ is halo, alkyl or hydrogen, with an oxygen-containing gas at a pressure from about 1 to about 100 atmospheres and a temperature from about 0° C. to about 300° C. in the presence of base, a metal salt catalyst selected from the salts of cobalt, manganese, chromium and nickel, and activated charcoal.

4,453,017

PROCESS FOR THE METHYLATION OF PHENOLIC COMPOUNDS WITH TRIMETHYL PHOSPHATE

Randall B. Nelson, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,326
Int. Cl.³ C07C 41/16, 45/61
U.S. Cl. 568—433 7 Claims

1. A process for the melt phase preparation of a methylated phenolic ether comprising

reacting in the absence of a solvent at a temperature of at least the melting point of the phenolic compound a phenolic carbonyl compound containing an unreacted phenolic hydroxy group with trimethyl phosphate until a methylated phenol is produced, said reaction occuring in one step and without the intermediate production of a phenolate.

4,453,018

PROCESS FOR THE ALKYLATION OF PHENOLIC COMPOUNDS WITH ALKYL SULFITES

Randall B. Nelson, Shelton, Wash., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,327
Int. Cl.³ C07C 41/16, 45/61
U.S. Cl. 568—433 9 Claims

1. A process for the melt phase preparation of an alkylated phenolic ether comprising

reacting in the absence of a solvent at a temperature of at least the melting point of the phenolic compound a phenolic carbonyl compound containing an unreacted phenolic hydroxy group with an alkyl sulfite of the formula $(RO)_2SO$ in which R is a one to four carbon alkyl group until an alkylated phenol is produced, said reaction occuring in one step and without the intermediate production of a phenolate.

4,453,019

USE OF MIXED METAL CATALYSTS IN THE HYDROFORMYLATION OF OLEFINS TO PRODUCE LINEAR ALDEHYDES AND ALCOHOLS

Biau-Hung Chang, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 2, 1982, Ser. No. 414,382
Int. Cl.³ C07C 45/50
U.S. Cl. 568—454 14 Claims

1. The method of forming a linear aldehyde from C_3–C_{25} olefin comprising reacting said olefin with CO and a hydrogen source in the presence of a catalyst, said catalyst comprising a hydroformylation catalyst composition comprising in admixture a first transition metal compound and a second transition metal compound wherein said first transition metal compound is selected from the group consisting essentially of anionic and neutral Group VIII transition metal compounds; and

wherein said second transition metal compound has the following general formula:

$$M^{+n}[H_yA_xL_z]^{-n}$$

wherein

n is an integer greater than or equal to 2;

M is a cationic species;

A is a transition metal selected from the group consisting essentially of Ru, Os, Fe, Cr, Co, Rh, Ir, Mo and W;

x is an integer greater than or equal to 1;

L is a ligand;

z is an integer less than or equal to the available coordination bonding sites of A; and

y is an integer greater than or equal to 0.

4,453,020

PROCESS FOR PURIFYING THE METHANOL EMPLOYED IN THE PREPARATION OF FORMALDEHYDE

Kurt Klinkmann, Cologne, Fed. Rep. of Germany, and Paul R. Wambach, deceased, late of Leverkusen, Fed. Rep. of Germany (by Christa Wambach, legal representative), assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 354,841, Mar. 4, 1982, abandoned. This application Aug. 25, 1982, Ser. No. 411,397

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110723

Int. Cl.³ C07C *47/052*

U.S. Cl. 568—473 **13 Claims**

1. A process for production of formaldehyde which comprises:

(A) passing fresh methanol or methanol/water mixture through a bed of acid and/or basic ion exchanger and thereafter vaporizing a portion of said methanol or methanol/water mixture feed in a vaporizer whereby some of the methanol or methanol/water mixture remains in liquid phase;

(B) passing the vapor containing a methanol or methanol/water mixture to a reaction vessel to which oxygen or an oxygen containing gas is introduced and therein converting the methanol to formaldehyde in the presence of a silver catalyst;

(C) withdrawing at least a portion of said liquid phase and passing said liquid phase over an acid and/or basic ion exchanger; and

(D) recycling the liquid phase after contact with said acid and/or basic ion exchanger to said vaporizer.

4,453,021

DINITROPROPYL FLUORODINITROETHYL FORMAL PLASTICIZER AND METHOD OF PREPARATION

Horst G. Adolph, Silver Spring, Md., assignor to The United States of Americaas represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1982, Ser. No. 453,674

Int. Cl.³ C07C *43/00, 79/34*

U.S. Cl. 568—590 **6 Claims**

1. 2,2-dinitropropyl 2-fluoro-2,2-dinitroethyl formal.

2. A method of preparing 2,2-dinitropropyl 2-fluoro-2,2-dinitroethyl formal by the following steps in order:

(1) reacting one mole of formaldehyde with each mole of 2,2-dinitropropanol in the presence of an excess of aluminum chloride to produce chloromethyl 2,2-dinitropropyl ether;

(2) isolating the product chloromethyl 2,2-dinitropropyl ether;

(3) reacting one mole of 2-fluoro-2,2-dinitroethanol with each mole of chloromethyl 2,2-dinitropropyl ether in the presence of titanium tetrachloride to produce 2,2-dinitropropyl 2-fluoro-2,2-dinitroethyl formal; and

(4) isolating the product 2,2-dinitropropyl 2-fluoro-2,2-dinitroethyl formal.

4,453,022

PROCESS FOR PREPARING NONIONIC SURFACTANTS-OXYALKYLATION WITH CALCIUM AND/OR STRONTIUM CATALYSTS

James H. McCain, and Louis F. Theiling, Jr., both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 21, 1982, Ser. No. 370,204

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—618 **8 Claims**

1. The method for the alkoxylation of a reactive hydrogen compound selected from the group consisting of monohydric alcohols having between about 8 and about 25 carbon atoms, both branched and linear, and a difunctional polypropylene oxide polymer having an average molecular weight in the range of 1000 to 5000 comprising contacting said reactive hydrogen compound with an alkylene oxide having between 2 and 4 carbon atoms in the presence of a catalyst selected from the group consisting of calcium alkoxides, strontium alkoxides, calcium phenoxides and strontium phenoxides and an oxyalkylation catalyst promoter selected from the group consisting of superphosphoric acid, phosphoric acid, sulfuric acid, alkali metal and alkaline earth metal dihydrogen phosphates and dihydrogen diphosphates, alkyl, aryl, araalkyl and alkyaryl dihydrogen phosphates, monoalkyl hydrogen sulfates, carbon dioxide, carbonic acid, alkali metal bicarbonates, oxides of phosphorus, sulfur trioxide, sulfur dioxide and sulfurous acid at a temperature between about 50° C. and about 400° C. employing about 2 to about 50 moles of alkylene oxide per mole of reactive hydrogen.

4,453,023

PROCESS FOR PREPARING NONIONIC SURFACTANTS-OXYALKYLATION WITH PROMOTED BARIUM CATALYSTS

James H. McCain, and Louis F. Theiling, Jr., both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 30, 1982, Ser. No. 454,573

Int. Cl.³ C07B *41/03*

U.S. Cl. 568—618 **7 Claims**

1. The method for the alkoxylation of a reactive hydrogen compound, selected from the group consisting of monohydric alcohols having between about 8 to about 25 carbon atoms and a difunctional poly(propylene oxide) polymer having an average molecular weight in the range of 1,000 to 5,000, comprising contacting said hydrogen compound with an alkylene oxide having between 2 and 4 carbon atoms in the presence of a catalyst selected from the group consisting of barium alkoxides, barium phenoxides, barium hydroxides, hydrates thereof or mixtures thereof and an oxyalkylation catalyst promoter selected from the group consisting of superphosphoric acid, phosphoric acid, alkali metal and alkaline earth metal dihydrogen phosphates and dihydrogen diphosphates, alkyl, aryl, araalkyl and alkyaryl dihydrogen phosphates, phosphorous trioxide, and carbon dioxide at a temperature between about 50° C. and about 400° C. employing about 2 to about 80 moles of alkylene oxide per mole of reactive hydrogen compound.

4,453,024

PROCESS FOR THE META-HYDROXYLATION OF ALKYLPHENOLS AND THE ETHERS THEREOF IN A SUPERACIDIC MEDIUM

Marie-Paule Jouannetaud; Jean-Pierre Gesson, and Jean-Claude Jacquesy, all of Poitiers, France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 267,358, May 26, 1981. This application Sep. 30, 1982, Ser. No. 428,673

Claims priority, application France, Jun. 3, 1980, 80 12261

Int. Cl.³ C07C *37/60*

U.S. Cl. 568—768 **6 Claims**

1. A process for hydroxylating mono-phenols having one or more C_1 to C_8 alkyl substituents in which the carbon atom of the alkyl group bonded to the aromatic nucleus has at least one hydrogen atom bonded thereto and the phenolic ethers thereof in the meta position relative to the phenol or ether function which comprises reacting the phenol with an aqueous solution of hydrogen peroxide in the presence of a liquid superacid having a H_0 acidity estimated on the HAMMETT logarithmic scale of greater than −11 up to about −25 at a temperature of between 0° and −80° C.

4,453,025

PROCESS FOR THE PREPARATION OF 3,5-XYLENOL

Antonius J. C. Van Seters, and Freddy Wattimena, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 23, 1982, Ser. No. 443,990

Claims priority, application United Kingdom, Dec. 2, 1981, 8136372

Int. Cl.³ C07C 37/06

U.S. Cl. 568—799 26 Claims

1. A process for the preparation of 3,5-xylenol from isophorone which comprises contacting isophorone at a temperature in the range from about 525° to 625° C. with a heterogeneous catalyst comprising didymium supported on an alumina carrier, said catalyst containing between about 0.5 and 20 percent by weight of didymium, calculated on weight of the carrier.

4,453,026

PROCESS FOR CONTINUOUSLY PREPARING ETHYLENE GLYCOL

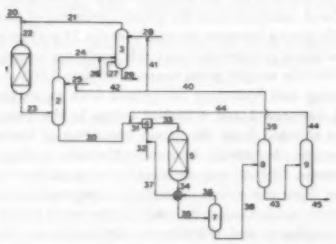
Susumu Tahara; Kozo Fujii; Keig Nishihira; Masaoki Matsuda, and Katsuhiko Mizutare, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Continuation of Ser. No. 293,704, Aug. 17, 1981, abandoned. This application Jan. 19, 1983, Ser. No. 459,424

Claims priority, application Japan, Sep. 2, 1980, 55-120676; Sep. 2, 1980, 55-120677; Jan. 22, 1981, 56-7175

Int. Cl.³ C07C 31/20, 29/136

U.S. Cl. 568—864 16 Claims



1. A process for continuously preparing ethylene glycol, which comprises

(1) a first step of contacting a gas containing carbon monoxide and an ester of nitrous acid with a solid catalyst of platinum group metal series in the gaseous phase at a temperature of from 50° to 200° C. and a pressure of from ambient pressure to 10 kg/cm² (guage) thereby to obtain a product containing a diester of oxalic acid, and said ester of nitrous acid is an ester of a saturated monohydric aliphatic or alicyclic alcohol having 1 to 8 carbon atoms with nitrous acid,

(2) a second step of condensing the product of the first step thereby to separate a non-condensed gas containing nitrogen monoxide formed by the catalytic reaction of the first step from a condensed liquid containing the diester of oxalic acid,

(3) a third step of contacting in a regeneration column the non-condensed gas of the second step with a gas containing molecular oxygen and an alcohol to produce a gas mixture containing (i) an ester of nitrous acid and (ii) nitrogen monoxide and controlling the concentration of said nitrogen monoxide within the range of from 2 to 7% by volume, and recycling said gas mixture containing an ester of nitrous acid to the first step,

(4) a fourth step of contacting the condensed liquid of the second step containing the diester of oxalic acid and hydrogen with a catalyst for hydrogenation in the gaseous phase thereby to obtain a product containing ethylene glycol,

(5) a fifth step of distilling the product of the fourth step thereby to distil out the alcohol and to obtain ethylene glycol, and

(6) a sixth step of recycling the alcohol of the fifth step as an alcohol source for the third step.

4,453,027

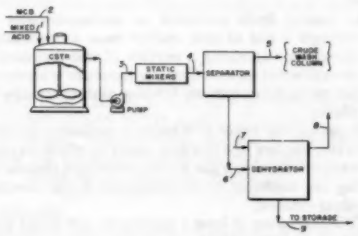
ADIABATIC PROCESS FOR THE NITRATION OF HALOBENZENES

Kumbakonam R. Vaidyanathan, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1982, Ser. No. 448,456

Int. Cl.³ C07C 79/12

U.S. Cl. 568—937 5 Claims



1. In a continuous process for the production of nitrohalobenzene from halobenzene by reacting a halobenzene with nitric acid and a carrier acid selected from the group consisting of sulfuric acid, phosphoric acid, sulfonic acid and mixtures thereof, the improvement comprising bringing together more than two moles of the carrier acid and about 1 mole of nitric acid with an excess of 1 mole of the halobenzene.

4,453,028

PERFLUORINATED COMPOUNDS WITH CYCLOHEXYL GROUPS

Richard J. Lagow, 6204 Shadow Mountain Dr., Austin, Tex. 78731

Filed Mar. 29, 1982, Ser. No. 363,112

Int. Cl.³ C07C 19/08

U.S. Cl. 570—130 2 Claims

1. Perfluorinated tetracyclohexylmethane.

4,453,029

SELECTIVE SORPTION BY ZEOLITES

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 105,190, Dec. 19, 1979, Pat. No. 4,309,281. This application Sep. 30, 1981, Ser. No. 307,046

Int. Cl.³ C07C 7/13

U.S. Cl. 585—828 10 Claims

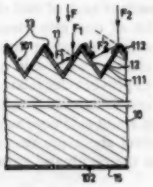
1. A process for the selective separation of aromatic compounds selected from the first group consisting of mono-substituted and para-disubstituted benzene ring compounds and mono-substituted and para-disubstituted pyridine ring compounds in admixture with aromatic compounds selected from the second group consisting of ortho-disubstituted, meta-disubstituted and more highly substituted benzene ring compounds and ortho-disubstituted, meta-disubstituted and more highly substituted pyridine ring compounds which comprises contacting the mixture with a cesium-exchange ZSM-5 zeolite characterized by a SiO_2/Al_2O_3 mole ratio of at least about 12 and a Constraint Index in the approximate range of greater than 2 to about 12 to effect the selective sorption of said aromatic compounds selected from the first group consisting of mono-substituted and para-disubstituted benzene ring compounds and mono-substituted and para-disubstituted pyridine ring compounds by said zeolite.

4,453,030

SOLAR CELL HAVING A GROOVED PHOTOSENSITIVE SURFACE

Gérard R. David, 14870 Cambes-En-Plaine, and Daniel M. Pincon, 23 rue Chatesubriand, 14000 Caen, both of France

Filed Aug. 10, 1981, Ser. No. 291,160
Claims priority, application France, Aug. 29, 1980, 80 18783
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—256 4 Claims



1. A solar cell comprising a semiconductor wafer having a major light-receiving surface, which comprises:

a semiconductor junction adjacent to said major surface;

a plurality of substantially V-shaped parallel adjoining grooves in said major surface, the sidewalls of each adjacent pair of grooves intersecting at an apex; and

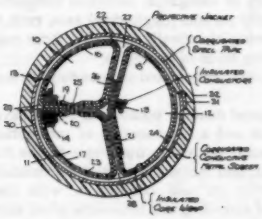
a network of electrically conductive laminations on said grooves and connected together by a collector band to form an electrode of said solar cell, each lamination covering only the upper part of at least one of the pair of sidewalls extending from each apex.

4,453,031

MULTI-COMPARTMENT SCREENED TELEPHONE CABLES

Jimmy D. Justiss, Bonham, Tex., assignor to GK Technologies, Inc., Greenwich, Conn.

Filed Nov. 15, 1982, Ser. No. 441,656
Int. Cl.³ H01B *11/08*
U.S. Cl. 174—36 16 Claims



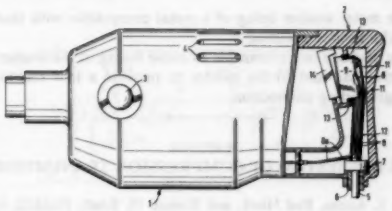
1. A communication cable having at least three cable cores shaped and bundled together so that each of said cores is in confronting broad surface contact with at least two others of said cores and so that said bundled together cores have a generally circular radially outer boundary, characterized in that at least two of said cable cores have a first character with equal wire size and equal number of pairs enabling each of said two cores to carry PCM carrier messages in a different direction one from the other, at least one of said cores other than said two cores has a second character different from said first character and capable of carrying control and voice frequency signals in both directions, each of said cores of said first and second character including a plurality of individually insulated conductors of a gauge appropriate to the signal service for which the respective core is intended, a metal screen around at least each of said cores of said first character with a portion of said screen extending between adjacent ones of said cores of said first character to shield the conductors within each of said cores of said first character from interference arising outside of the respective core, and means for unifying all of said cores in said bundled together relationship.

4,453,032

ELASTIC ELECTRICAL INSULATING MATERIAL COVER FOR THE CABLE IN THE HANDLE OF A MANUALLY OPERATED ELECTRICAL APPLIANCE

Gerhard Rumpp, Inning, and Werner Theissig, Munich, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 2, 1982, Ser. No. 364,883
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114870
Int. Cl.³ H02K *11/00;* B25D *17/04;* H01H *9/06;* H01R *4/70*
U.S. Cl. 174—46 1 Claim



1. A manually operated electrical appliance, such as a hand-held drill or the like, comprising a housing, a handle projecting from said housing and forming an enclosed hollow space, an electrical component including electrical contacts located within the hollow space in said handle, an electrical cable extending through an opening in said handle into the hollow space in said handle and connected to said electrical contacts therein, wherein the improvement comprises an elastic electrical insulating material cover in the shape of a hose-like member located within the hollow space in said handle and said hose-like member having a first end and a second end and completely enclosing and insulating said electrical cable and said electrical contacts within the hollow space in said handle, a bushing positioned within said opening and extending into the hollow space in said handle for holding said cable as it passes through said opening into said handle, a retaining ring located at the end of said bushing within said handle and said retaining ring encircling and holding said cable, said retaining ring being spaced from said electrical component, ribs extending inwardly from the inside surface of said handle spaced from said opening and located around said electrical component, and the first end of said hose-like member being secured between said ribs and said electrical component and the second end of said hose-like member abutting said retaining ring.

4,453,033

LEAD GROUNDING

Raymond J. Duff; Steven A. Tower, both of North Dartmouth, and Jay S. Greenspan, South Dartmouth, all of Mass., assignors to Isotronics, Inc., New Bedford, Mass.

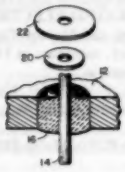
Filed Mar. 18, 1982, Ser. No. 359,209
Int. Cl.³ H05K *5/04*
U.S. Cl. 174—52 FP 9 Claims

1. In a microcircuit package which includes a conductive header and a plurality of leads each extending through a respective opening and retained in the opening and electrically insulated from the header by glass seals, means for grounding one or more leads to the header comprising for each such lead:

a braze preform ring disposed over the lead and having an opening to slidably fit over the lead, and sufficient material to provide a braze fillet;

a metal washer disposed around the lead and supported on

the preform ring, the metal washer having an opening to slidably fit over the lead and an outside diameter larger than that of the header opening to provide a peripheral surface in contact with the confronting peripheral surface of the header;



the metal washer being of a metal compatible with that of the header material;

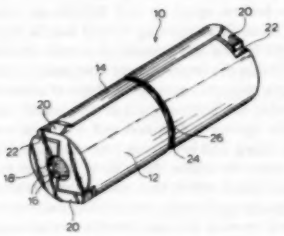
the package being brazable to cause fusing of the washer to the lead and to the header to provide a low resistance grounding connection.

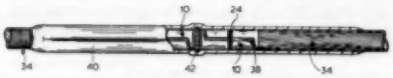
4,453,034

ONE DIE SYSTEM OF COMPRESSION TRANSMISSION FITTINGS

Nick S. Annas, Red Hook, and Russell H. Kraft, Fishkill, both of N.Y., assignors to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,880
Int. Cl.³ H01R *4/20*
U.S. Cl. 174—79 **7 Claims**





1. A core grip for use in conjunction with a conduction cable having an outer conductor and core and a hollow elongated compression barrel, wherein said core grip is adapted to be disposed about the core, and the barrel is adapted to be disposed about said core grip and is crimped into a mechanical engagement with the core grip which in turn mechanically engages the core, said core grip comprising at least two separable semi-circular cylindrical grip elements, each having a respective longitudinal groove therethrough each of which forms a part of an axial bore in the core grip adapted to receive the core, means at the ends of each of said elements defining a tab and slot, tab and slot of one grip element being respectively engageable in a mating fashion with the slot and tab of another grip element when said grip elements are coupled together so as to prevent the relative longitudinal movement therebetween and form a solid cylindrical said core grip when positioned about said core which upon crimping of a compression barrel about the core grip causes mechanical engagement therewith and in turn the core grip with the core.

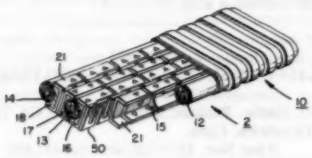
2. In combination a first core grip and a hollow elongated compression barrel for use in conjunction with a conduction cable having an outer conductor and core the first core grip comprising: at least two separable semi-circular cylindrical grip elements each having a respective longitudinal groove therethrough each of which forms a part of an axial bore in the first core grip adapted to receive the core of a conduction cable, means at the ends of each of said elements defining a tab and slot, tab and slot of one grip element being positioned respectively engageable in a mating fashion with the slot and tab of another grip element when said grip elements are coupled together so as to prevent the relative longitudinal movement therebetween and form a solid cylindrical said first core grip when positioned about said core which upon crimping of said compression barrel about the first core grip causes mechanical engagement therewith and in turn the first core grip with the core.

4,453,035

OIL WELL CABLE

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Sep. 30, 1982, Ser. No. 429,530
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—103 **15 Claims**



15. An electrical cable comprising:

a plurality of elongated, electrical conductors having substantially parallel longitudinal axes, each of said conductors being electrically insulated from one another by a covering layer of insulation;

a jacket outwardly of and surrounding the insulated conductors;

an elongated member within said jacket having a longitudinal axis and a cross-section of substantially rectangular cross-sectional shape transverse to the longitudinal axis thereof, said member mounted intermediate the layers of insulation on said conductors with the cross-section thereof extending in a transverse plane more closely adjacent opposite portions of said jacket than the portions of insulation layers in the transverse plane;

said member having a rigidity in transverse cross-section greater than that of the insulation layers for opposing insulation-disruptive forces impacting said jacket and being sufficiently flexible for long-radius bending with the cable in a plane substantially perpendicular to a plane containing said longitudinal axes of said conductors.

4,453,036

OIL WELL CABLE

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

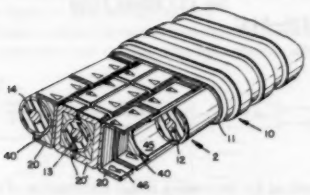
Filed Sep. 30, 1982, Ser. No. 429,781
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—103 **9 Claims**

1. An improved electrical cable comprising:

a plurality of elongated electrical conductors having substantially parallel spaced apart axes, lying substantially in one plane,

electrical insulation surrounding individual ones of said conductors for electrically insulating each of said conductors;

a first and second discrete elongated member each having a first leg portion lying substantially parallel to the one plane and extending toward and adjacent the outermost surface of the insulation covering a different one of the conductors, said first and second members each having a second leg portion lying substantially parallel to a second



plane substantially perpendicular to said one plane and joined to a respective one of a first leg portion;

the second leg portions of said first and second members being less compressible in directions parallel to said second plane than the insulating material on the adjacent one of the conductors and the cross-sectional dimension of said second leg portion of said first member being greater than the cross-sectional dimension of said second leg portion of said second members; and

a jacket surrounding said first and second members.

4,453,037

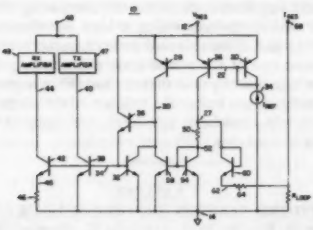
LOOP LENGTH COMPENSATION CIRCUIT

Michael B. Terry, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,142

Int. Cl.³ H04B *3/36*

U.S. Cl. 179—16 F **5 Claims**



1. A circuit for controlling the gain of an amplifier as a function of a residual loop current, comprising:

a first current source for producing a first current which is essentially constant;

means connected to said first current source and coupled to monitor said residual loop current for drawing a second current from said first current;

means connected to said first current source for receiving a third current from said first current, said first current essentially equal to the sum of said second and said third currents;

a second current source for producing a fourth current which is essentially constant;

means connected to said means for receiving a third current and to said second current source for drawing a fifth current from said fourth current, said fifth current porportional to said third current;

means connected to said second current source for receiving a sixth current from said fourth current, said fourth current essentially equal to the sum of said fifth current and said sixth current; and

means connected to said amplifier and responsive to said sixth current for controlling the gain of said amplifier.

4,453,038

CIRCUIT ARRANGEMENT FOR PRODUCING CONTROL MEANS FROM LINE CURRENT

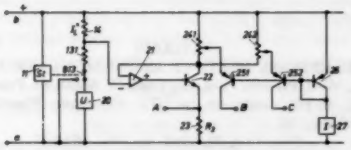
Kurt Eberhardt; Dietrich Höppner, and Bernhard Rall, all of Ulm, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,401

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116262

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 B **5 Claims**



1. A circuit arrangement, in a subscriber terminal which is applied with a line current from a subscriber line and which includes at least one of an earphone and a microphone amplifier with a control input for varying an amplification factor thereof, comprising:

current to voltage conversion means connected to the line for converting the line current into a signal voltage which is proportional to the line current;

voltage threshold means connected to said conversion means for providing the amount by which the signal voltage exceeds a selected threshold voltage and

at least one first grounded base transistor having an emitter connected to said voltage threshold means and a collector connected to said control input of said at least one amplifier, a collector DC current of said at least one first transistor varying exponentially with a reciprocal value of the line current.

4,453,039

ARRANGEMENT FOR AVOIDING ANNOYING SUSTAINED OSCILLATIONS IN A CLOSED-LOOP SYSTEM AND LOUD-SPEAKING TELEPHONE SET EMPLOYING THIS ARRANGEMENT

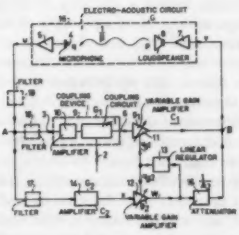
Gilbert M. M. Ferrieu, Bievres, France, assignor to Telecommunications Radioelectriques et Telephoniques, Paris, France

Filed Apr. 28, 1982, Ser. No. 372,430

Claims priority, application France, May 8, 1981, 81 09190

Int. Cl.³ H04M *9/08*; H04R *3/02*

U.S. Cl. 179—81 B **19 Claims**



1. In an arrangement for avoiding sustained, annoying oscil-

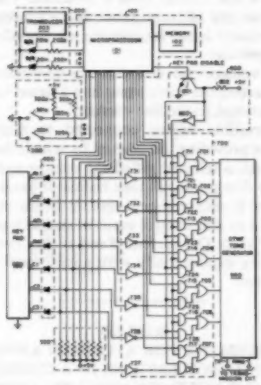
lations in a given frequency band in a closed-loop system, the arrangement comprising a variable-gain amplifier incorporated in a first path having input and output terminals and which forms part of the loop of said system, the improvement wherein a second path which has at least one part separate from said first path is provided between the input and output terminals of the first path, and further comprising means connected to ensure that the gain in the second path remains higher than the gain in the first path in said frequency band where the oscillations are liable to be produced, and means applying a signal formed in said part of the second path which is separate from the first path to the input of a linear regulator connected to control at least one variable-gain amplifier which forms part of the second path, to ensure that the signal at the input of the said regulator remains constant for a certain value of the said signal formed in the second path.

4,453,040

TELEPHONE FEATURE ASSIGNMENT CIRCUIT

Ann L. Wolf, Pinellas Park, and Louis W. Smith, St. Petersburg, both of Fla., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 23, 1982, Ser. No. 452,587
Int. Cl.³ H04M *1/274*
U.S. Cl. 179—81 C **21 Claims**



1. A telephone feature assignment circuit for use in a telephone including a plurality of switches each being operative to successively provide a plurality of appearances of a switch signal, and a keypad being operative to provide a plurality of character signals, said telephone being operative to provide a plurality of features, each in response to operation of a different switch, said telephone feature assignment circuit comprising:

storage means having a plurality of storage locations and being operative to store a plurality of features codes, each being associated with one of said plurality of features;

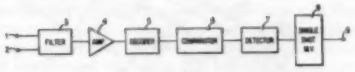
a microprocessor connected between said switches and said storage means, and operative in response to the occurrence, in succession for each switch, of a first appearance of predetermined duration of said switch signal, a predetermined character signal of a predetermined duration, at least one character signal having a predetermined relationship to one of said feature codes, and a second appearance of predetermined duration of said switch signal, to store in said storage means a data code associating said switch with said one of said feature codes, whereby each feature is assigned to an associated switch.

4,453,041

METHOD AND APPARATUS FOR PROCESSING CODED INFORMATION RECEIVED THROUGH A TELEPHONE LINE DURING THE NON-ACTIVE INTERVALS OF A RINGING PERIOD

Marcelo Castro, and Horacio Castro, both of El Salvador 5962, Buenos Aires, Argentina

Continuation-in-part of Ser. No. 150,178, May 15, 1980. This application Aug. 18, 1980, Ser. No. 178,862
Claims priority, application Argentina, Mar. 31, 1980, 280506
Int. Cl.³ H04M *15/06*
U.S. Cl. 179—84 C **45 Claims**



1. A method for processing coded information of the Touch-Tone type sent through a phone line between a calling subscriber and a called subscriber and comprising at least one character, said phone line being included in a telephone system which closes a ringing loop between the calling and called subscriber upon completion of dialing the number of the called subscriber and which transmits a ringing signal during a ringing period initiated after completion of said dialing, and which closes a conversation loop when the call is answered, the method comprising the steps of: (A) normally sending from the calling subscriber the call signals corresponding to the phone number of the called subscriber; (B) when the calling subscriber preceives corresponding signals advising that ringing signals are being sent to the called subscriber in resonse to the closing of the ringing loop, sending through the calling subscriber at least one pre-established code signal, comprising at least one character, during at least one non-active interval of the ringing period; (C) suppressing at the called subscriber the ringing signals received during the active intervals of the ringing period and letting through said at least one code character; (D) amplifying the code character let through; (E) decoding said amplified code character, comparing the decoded character with codes comprising at least one character stored in a memory and, if the received code character is coincidental with at least one of the stored code characters, generating a validation signal in response thereto; and (F) in response to said validation signal and before the receiver of the phone set of the called subscriber has been unhooked, activating at the called subscriber at least one utilization circuit.

4,453,042

TELEPHONE STATION SIGNALING LOCK CIRCUIT

Ann L. Wolf, Pinellas Park, and John G. Wagoner, St. Petersburg, both of Fla., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 23, 1982, Ser. No. 452,588
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 VF **12 Claims**

1. A telephone station signaling lock circuit for use in a telephone station including a keypad being operative to provide more than one plurality of pairs of row and column signals, and a tone generator being operative to provide a plurality of pairs of tones, said signaling lock circuit comprising:

a station lock switch being operative to provide a switch signal;

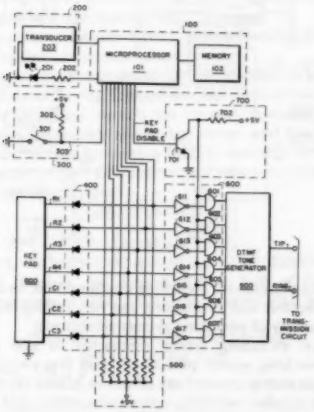
storage means being operative to provide a stored lock status signal, a stored unlock status signal and a stored unlock code signal, each in response to a lock status signal, unlock status signal or unlock code signal, respectively, being stored in said storage means;

a microprocessor connected between said station lock switch and said storage means and being operative in response to said switch signal to retrieve said stored lock

status signal or said stored unlock status signal, and said microprocessor being operative in response to said stored unlock status signal to provide disable and first sensible control signals and to store a lock status signal in said storage means;

said microprocessor being further operative in response to said switch signal, said stored lock status signal and a first plurality of pairs of row and column signals representative of said stored unlock code signal, to provide enable and second sensible control signals, and to store an unlock status signal in said storage means;

gating means coupled between said microprocessor and said tone generator and further coupled between said keypad



and said tone generator, and being operative in response to said enable signal and said pairs of row and column signals to provide signals representative of said pairs of row and column signals, and being further operative in response to said disable signal to inhibit said signals representative of said row and column signals;

said tone generator being operative in response to said signals representative of said pairs of row and column signals to provide an associated pair of tones; and

first sensible indication means connected to said microprocessor and being operative in response to said first sensible control signal to provide a first sensible signal, and being further operative in response to said second sensible control signal to provide a second sensible signal.

4,453,043

TELEPHONE FOR A PHYSICALLY HANDICAPPED PERSON

Lech S. Zielinski, Ottawa; Conrad Lafrance, Alymer, and Jacek J. Wojcik, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1982, Ser. No. 345,936
Int. Cl.³ H04M *1/26, 1/00*
U.S. Cl. 179—90 BD **1 Claim**

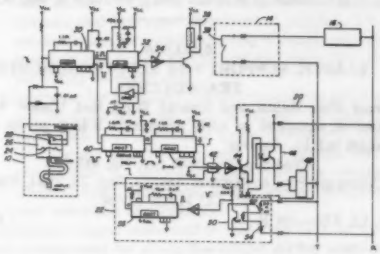
1. A call sequence control circuit for use in a telephone system for use by a physically handicapped person comprising:

a transducer;

a controller under the control of the transducer operable to make and break an electrical connection between a telephone speech circuit and a telephone line;

signal generating means under the control of the controller for generating an alerting signal and for transmitting the signal to the telephone line;

detector means for detecting ringing voltage on the telephone line; and



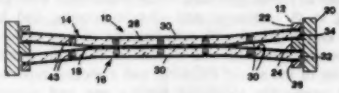
inhibiting means under the control of the detector means for preventing transmission of said alerting signal while ringing voltage is being detected by the detector means.

4,453,044

ELECTRO-ACOUSTIC TRANSDUCER WITH PLURAL PIEZOELECTRIC FILM

Preston V. Murphy, Geneva, Switzerland, assignor to Lectret S.A., Geneva, Switzerland

Filed Jan. 26, 1983, Ser. No. 461,147
Claims priority, application France, Feb. 9, 1982, 8202530
Int. Cl.³ H04R *17/00*
U.S. Cl. 179—110 A **7 Claims**



1. An acoustic transducer comprising

a hollow support member, and

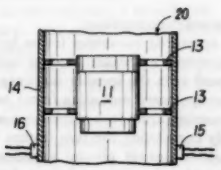
a plurality of metallized piezoelectric films operating as an oscillator, said films being mounted at their peripheries upon the hollow support member so that their peripheries are spaced apart, and being physically connected at center portions so that the films are parallel to each other throughout said center portions and diverging from each other near their peripharies.

4,453,045

SUPPORTING ARRANGEMENT FOR ELECTROACOUSTIC TRANSDUCERS

Bernhard Bruna, Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed Sep. 16, 1982, Ser. No. 418,972
Claims priority, application Austria, Sep. 24, 1981, 4105/81
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—146 R **5 Claims**



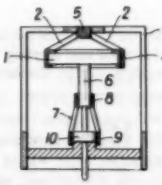
4. A microphone comprising a cylindrical housing, a cylindrical transducer located within said housing and spaced from

the interior thereof and an elastic ring supporting said transducer extending between said transducer and the housing and being of electrically conducting material and providing an electrical connection between said transducer to said housing.

4,453,046
ELASTIC SUPPORT FOR ELECTROACOUSTIC TRANSDUCERS

Werner Fidi, Baden, and Konrad Wolf, Bad Vöslau, both of Austria, assignors to AKG Akustische u.Kino-geräte gesellschaft m.b.H., Austria

Filed Sep. 16, 1982, Ser. No. 418,980
Claims priority, application Austria, Sep. 24, 1981, 4104/81
Int. Cl.³ H04R *13/04*
U.S. Cl. 179—146 R **7 Claims**



1. A mounting for an electroacoustic transducer paticularly a transducer having a cardioid directivity characteristic and having one face with a sound opening and an opposite face, comprising a cylindrical housing, a first tapered elastic support permeable to sound provided in the sound path from the sound opening to the adjacent end of said housing and having a narrow end engaged with said housing and an opposite widened end engaged with said transducer from the one face side at the rim of the sound opening, and a second tapered elastic support permeable to sound having one end engaging the transducer from the opposite face thereof and having an opposite end engaged with said housing.

4,453,047
SPEAKER MOUNTING BRACKET

Arthur M. Thompson, 12 Waterside Ave., Northport, N.Y. 11768

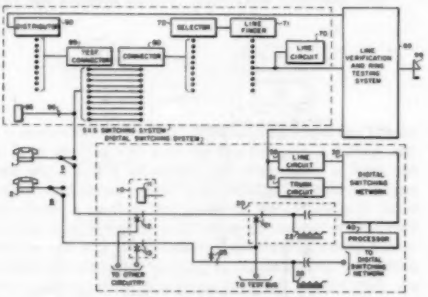
Filed Sep. 29, 1982, Ser. No. 427,079
Int. Cl.³ H04R *1/02, 1/20*
U.S. Cl. 179—146 R **5 Claims**

1. A speaker bracket comprising:
- a first planar apertured mounting frame having means for fixedly connecting a speaker thereto with the aperture thereof aligned with the speaker diaphragm;
- a second planar apertured mounting frame having means for fixedly connecting same to a planar mounting surface;
- means hingedly connecting the two frames together at one edge of each to permit pivotal movement of the two frames from a closed position wherein the two frames are substantially parallel with aligned apertures to an open position wherein the two frames are substantially perpendicular; and
- means for releasably locking the two frames in the closed position.

4,453,048
ARRANGEMENT FOR SUBSCRIBER LINE RING TESTING

William R. Daniels, and John S. Young, both of Scottsdale, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 1, 1982, Ser. No. 445,801
Int. Cl.³ H04M *3/26*
U.S. Cl. 179—175.2 R **4 Claims**



1. In a pre-cutover switching configuration, an arrangement for subscriber line verification and ring testing comprising:
- a plurality of switching system subscribers;
- a first switching system connected to said plurality of switching system subscribers, said first switching system operated to connect any of said switching system subscribers to other switching system subscribers, said first switching system comprising:
  - said plurality of switching system subscribers including at least a first subscriber operatively connected to said first switching system for said connection to other switching system subscribers; and
  - test connection means connected to said first subscriber and said test connection means operated to connect said first subscriber through said first switching system for a test access;
  - regular connection means connected to said first subscriber and operated to connect any of said switching system subscribers to said first switching system subscriber;
- said arrangement for subscriber line verification and ring testing further comprising:
- a second switching system connected to said plurality of switching system subscribers, said second switching system being in an untested condition for connecting said subscribers, said second switching system comprising:
  - said first subscriber connected to said second switching system; and
  - a switching network connected to each of said plurality of subscribers for establishing a connection between at least two of said subscribers;
- said arrangement for subscriber line verification and ring testing further comprising:
- means for testing connected to said test connection means of said first switching system and connected to said switching network of said second switching system, said means for testing operated to request transmission of a first signal to said first subscriber via said switching network;
- said means for testing connected to said first subscriber via said test connection means for said test access;
- said switching network responsive to said request of said means for testing to generate and to transmit said first signal to said first subscriber;

said means for testing operated to detect said first signal via said test access through said first switching system and said means for testing further operated to store an indication of first and second characteristics of said detected first signal;

said means for testing connected to said regular connection means for connecting to said first subscriber;

said means for testing operated to transmit a sequence of second signals to said regular connection means, said sequence of second signals including a number of second signals being one less than the number of signals for connecting to said first subscriber;

said means for testing operated to transmit a third signal via said test access to said test connection means;

said test connection means operated in response to said third signal to allow connection of said regular connection means to said test connection;

said means for testing operated to transmit a second signal to said regular connection means;

said regular connection means further operated to transmit a fourth signal having first and second characteristics to said means for testing via said test connection means;

said means for testing operated to detect said fourth signal and said means for testing further operated to store an indication of said first and second characteristics of said detected fourth signal.

4,453,049

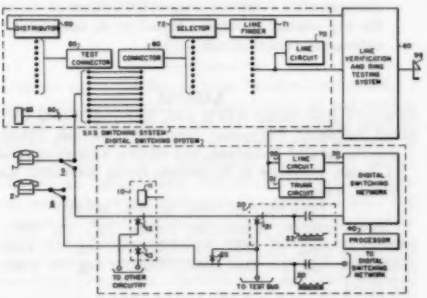
ARRANGEMENT FOR SINGLE LINE TESTING

William R. Daniels, and John S. Young, both of Scottsdale, Ariz., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 1, 1982, Ser. No. 445,802

Int. Cl.³ H04M *3/26*

U.S. Cl. 179—175.2 R **7 Claims**



1. In a pre-cutover switching configuration, an arrangement for single line testing comprising:

at least first and second switching system subscribers;

a first switching system connected to said first and second switching system subscribers, said first switching system being operated to connect said first and second subscribers to any switching system subscribers;

a second switching system connected to said first and second switching system subscribers, said second switching system being in an untested condition, said second switching system comprising:

a switching network connected to said first and second subscribers;

first means for switching connected to said first and to second subscribers, said first means for switching being operated to simultaneously open circuit said connection of said first and second subscribers to said switching network, said first means for switching being normally operated to simultaneously maintain said connections of said first and second subscribers to said switching network;

second means for switching connected between said switching network and said first means for switching, said second means for switching being operated to connect said first subscriber to a test interface bus, said second means for switching being normally operated to maintain said connection of said first subscriber to said switching network; and

third means for switching connected between said switching network and said first means for switching, said third means for switching being operated to connect said second subscriber to said test interface bus, said third means for switching being normally operated to maintain said connection of said second subscriber to said switching network; and

processor means connected to said switching network;

said arrangement for single line testing further comprising:

said first means for switching initially operated to open circuit said first and said second subscribers from said second and third means for switching;

means for testing connected to said first switching system and to said switching network of said second switching system, said means for testing being operated to request connection to said first switching system subscriber via said first and said second switching systems;

said processor means being responsive to said request of said means for testing to operate said first means for switching for simultaneously connecting said first and second subscribers to said switching network and said processor means being further responsive to said means for testing to operate said third means for switching for connecting said second subscriber to said test interface bus; and

said first subscriber being connected to said means for testing through said first means for switching, said second means for switching and said switching network.

4,453,050

EARPHONE

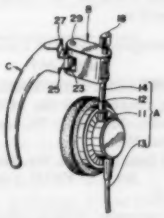
Kazuhiro Enokido, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 354,035

Claims priority, application Japan, Mar. 10, 1981, 56-33352[U]

Int. Cl.³ H04R *1/10*

U.S. Cl. 179—182 R **13 Claims**



1. An earphone comprising:

a housing accommodating a transducer;

a rod member connected in fixed non-rotatable manner to said housing;

curved lever means having one end portion designed as a free end portion to be engaged on the ear; and

separating means at one end being frictionally slidably supported on said rod member to permit up and down movement of the separating means along the rod member but with restraining means for preventing rotation of the separating means relative to the rod member, and a hingeable connection at its opposite end to the other end portion of said curved lever means, said separating means

providing a predetermined spacing from said transducer to said curved lever means.

4,453,051

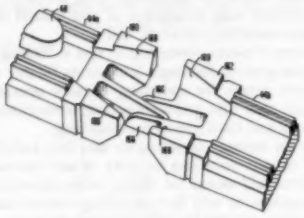
TRACK SWITCH HAVING POWER RAILS WITH INTERDIGITATED END MEMBERS

Jerry L. Brown, McMurray, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 12, 1982, Ser. No. 348,616

Int. Cl.³ E01B 7/04, 25/12; B60M 1/18

U.S. Cl. 191—22 C **9 Claims**



6. In power collection apparatus for a vehicle having a collector member and traveling along a track including a movable track switch operative with a first track section, the combination of

first power rail means operative with the collector member and positioned parallel to the first track section,

second power rail means operative with the collector member and positioned parallel to and movable with the track switch, with the second power rail means being separated a predetermined distance from the first power rail means,

said first power rail means including first coupling means cooperative with the collector member and having a first contact surface extending toward the second power rail means, and

said second power rail means including second coupling means cooperative with the collector member and having a second contact surface movable with the track switch and extending toward the first power rail means and substantially parallel with the first contact surface,

with the first contact surface extending past the second contact surface such that the collector member is controlled by the first and second contact surfaces when the vehicle travels between the track switch and the first power rail section.

4,453,052

ADJUSTABLE PRESSURE SWITCH

David W. Semian, One S. Park St., Madison, Wis. 53715, and Patric C. Quirke, Marshall, Ill., assignors to David W. Semian, Madison, Wis.

Filed Feb. 23, 1982, Ser. No. 351,520

Int. Cl.³ H01H 3/14

U.S. Cl. 200—85 R **18 Claims**

1. A pressure responsive switch, comprising:

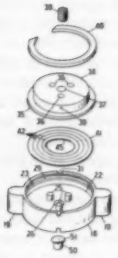
(a) a case made of a rigid insulating material with a cavity formed in one side having a bottom wall and a peripheral side wall;

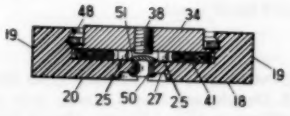
(b) an electrically conductive bottom contact member mounted in the case which extends from the bottom wall of the cavity to the outside of the case where it is exposed for connection to an electrical wire;

(c) a pressure plate having an outermost periphery conforming to the side wall of the cavity in the case, the pressure plate being mounted in the cavity in the case for up and down movement therein;

(d) an electrically insulating resilient annular member having a central aperture and comprised of a plurality of concentric O-rings formed of an elastomer material mounted between the pressure plate and the bottom wall of the cavity;

(e) means for holding the pressure plate in the cavity in the case and in contact with the resilient member while allowing the pressure plate to be moved toward the bottom of the cavity whereby the resilient member will be compressed by the pressure plate; and





(f) an electrically conductive top contact member mounted to the pressure plate having one end in opposed relation to the bottom contact mounted in the case and in position to make contact with the bottom contact member as the pressure plate is moved toward the bottom of the cavity, the top contact member adapted to be connected to an external electrical circuit.

4,453,053

CIRCUIT BREAKER WITH ARC RESTRICTING DEVICE

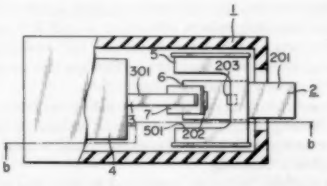
Shinji Yamagata, Fukuyama; Fumiyuki Hisatsune, Fukuyama; Junichi Terachi, Fukuyama, and Hajimu Yoshiyasu, Itami, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1982, Ser. No. 381,910

Claims priority, application Japan, Jul. 21, 1981, 56-109071[U]; Aug. 25, 1981, 56-126276[U]; Aug. 25, 1981, 56-126280[U]; Aug. 27, 1981, 56-127735[U]; Aug. 27, 1981, 56-127736[U]

Int. Cl.³ H01H 9/30

U.S. Cl. 200—144 R **9 Claims**



1. A circuit breaker with an arc restricting device, comprising a stationary contactor and a movable contactor, each contactor having a rigid conductor and a contact secured thereon; an electrically conductive projection mounted on and electrically connected to the conductor of at least one of said contactors in proximity to the contact thereon and on the side of the

contact toward which an arc drawn across a gap between said contacts when said contacts separate for enabling the arc to shift from said contact to said projection; an arc shield of a high resistivity material having a resistivity higher than that of said rigid conductors disposed on said at least one contactor and surrounding the peripheries of the contact thereon and said projection; and an arc extinguishing plate assembly provided in the space between said contacts and on the side thereof toward which the arc will run for cooling and extinguishing said arc.

4,453,054

CONTACT APPARATUS FOR VACUUM SWITCHES

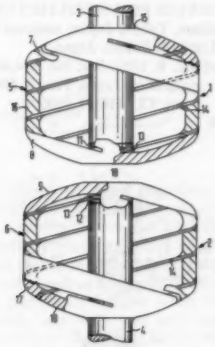
Gerhard Peche, and Günter Bialkowski, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,480

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133799

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **8 Claims**



1. Contact apparatus for vacuum switches, comprising a fixed and a movable contact bolt each having an end portion with an end face facing each other, two discus-shaped substantially identical contact discs each surrounding said end portion of a respective one of said contact bolts, each of said contact discs having an annular inner hollow space formed therein defining side walls facing each other having closed inner and outer side wall surfaces and said contact discs having side walls facing away from each other each being fastened to a respective one of said contact bolts, said end face of each of said end portions being disposed at a distance from said inner side wall surface of the corresponding one of said contact discs defining a gap therebetween, said side walls of said contact discs having slots formed therein said slots extended in the same direction, and coil turns disposed between said slots at a given slope producing an axial magnetic field at the instant of breaking contact.

4,453,055

LOUVERED ARC CHUTE

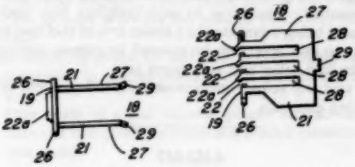
Rafael Berrios, Villa Carolina, and Harold E. Belttary, Rio Piedras, both of, assignors to Challenger Caribbean Corporation, Canovanas, P.R. and Commander Electrical Equipment, Inc., Scarborough, Canada

Filed Oct. 29, 1982, Ser. No. 437,713

Int. Cl.³ H01H *33/10*

U.S. Cl. 200—147 R **12 Claims**

1. In a device for making and breaking an electric circuit, the combination comprising relatively movable contacts, movable together to complete a circuit and away from each other to break a circuit and an arc chute formed in a "U" shape in a single piece stamping with louvered openings in the bight section, the louvered openings being arranged to direct the hot gases and molten metal resulting from an arc formed on the separation of the contacts away from a front face of said device.



4,453,056

DRIVING ARRANGEMENT FOR ELECTRICAL SWITCHES WITH AN INDEPENDENT TRIP RELEASE MECHANISM

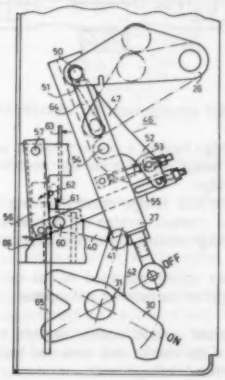
Reinhard Liebig, Berlin, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 484,098

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1982, 3214935

Int. Cl.³ H01H *3/30*

U.S. Cl. 200—153 SC **2 Claims**



1. In combination with a driving arrangement for an electrical switch having:

(a) first means for storing power to switch-on said switch;

(b) second means for storing power to switch-off said switch, said first and second means being activated at substantially the same time;

(c) interlocking elements for maintaining power stored by said second means; and

(d) release means for activating power stored by said second means, wherein a coupling bar movable along its longitudinal length transfers power stored by said second means to said switch;

the improvement of an independent trip release mechanism enabling the switch-off command and the switch-on command to be independent, which comprises a releasable coupling comprising:

(a) said coupling bar defining an oblong opening at its upper end;

(b) a roller connected to means for switching on said switch, and capable of longitudinal translation along said oblong opening;

(c) a two armed lever pivotally connected to said coupling bar below said portion of said bar defining an oblong

opening, said two armed lever having an upper arm which can contact said roller; and

(d) an activating element, said element being a rod arranged substantially transverse to said coupling bar, and said element being connected to a lower arm of said two armed lever so said lever can be pivoted to release contact between said roller and said upper arm;

wherein said trip release mechanism acts independent of said interlocking elements.

4,453,057

CONTACT ARRANGEMENT FOR ELECTRIC SWITCHGEAR

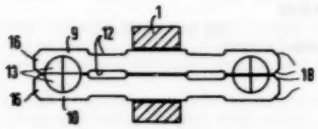
Georg Streich, Amberg; Werner Harbauer, Schwandorf, and Johann Bauer, Ebermannsdorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,884

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136354

Int. Cl.³ H01H *1/20*

U.S. Cl. 200—243 **5 Claims**



1. In a contact arrangement for electric switchgear of the type including:

a contact bridge having a contact pad at each end thereof, said ends being offset from the center portion of said contact bridge;

a movable contact bridge carrier having an opening into which the contact bridge is movably mounted, said contact bridge resting on a first support surface of said opening;

a compression spring mounted in the opening between a second support surface of the opening and the contact bridge;

a spring retainer guided against motion transverse to the direction of the carrier and mounted between said spring and said contact bridge; and

stationary contacts which engage the contact pads of the contact bridge when said carrier is moved in a specific direction;

the improvement comprising:

the contact bridge being longitudinally divided into two adjacent contact bridge parts, said contact pad thereby being divided into two parts, each contact bridge part having a narrowed width in the vicinity of the offset, said contact bridge parts being disposed in substantially touching side by side engagement adjacent said ends so that said two parts of said contact pad are also in substantially touching side by side engagement.

4,453,058

LEAF SWITCH COVER

Muneyoshi Miyata, Tokyo, Japan, assignor to Mitsuku Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,200

Claims priority, application Japan, Dec. 15, 1981, 56-202974; Mar. 16, 1982, 57-41575

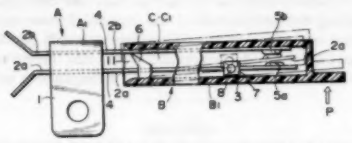
Int. Cl.³ H01H *1/26*

U.S. Cl. 200—283 **15 Claims**

1. A cover for a leaf switch having at least one movable and one fixed contact elements comprising:

a rigid, enclosed cover body defining an internal space, opened at one end adapted to receive said contact elements in the internal space through said open end; and

means for engagement with said movable contact element,



said engagement means fixedly coupled to said cover body such that movement of said cover body causes said movable contact element to move into or out of contact with said fixed contact element.

4,453,059

MOUNTING DEVICE FOR SWITCHES OR THE LIKE

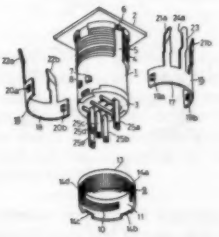
Toshitsugu Fukushima, Tokyo, Japan, assignor to Sun Dengyosha Company, Limited, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,483

Claims priority, application Japan, Feb. 3, 1982, 57-13041[U]

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—296 **10 Claims**



1. An assembly for mounting a switch mechanism to a panel plate, comprising:

a cylindrical body for accomodating the switch mechanism therein, having an engaging portion at an upper end thereof for engaging the panel plate, said cylindrical body having an outer peripheral surface, said outer peripheral surface having a mounting portion formed therein; and

a pair of elastic mounting members mountable on said cylindrical body;

said pair of elastic mounting members each comprising a circularly curved base portion detachably mountable on said mounting portion on a respective opposite side of said cylindrical body and two elastic mounting pieces extending upward from said base portion and having respective upper portions angled radially outwardly for locking each mounting member and said cylindrical body onto the panel plate when said base portion is mounted on said mounting portion, at least one of said pair of elastic mounting members having an elastic anti-rotation member having an upper end which elastically engages said cylindrical body and blocks rotation of said pair of mounting members relative to said cylindrical body and the panel plate when the base portions thereof are mounted on said mounting portion on the respective opposite sides of said cylindrical body;

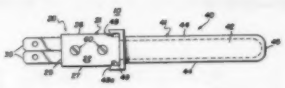
said cylindrical body including an upper projection projecting from said outer peripheral surface adjacent said upper end, said elastic anti-rotation member having means, at the top end thereof, for holding said upper projection.

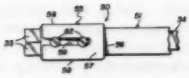
4,453,060

SWITCH BLADE COVER

Syng N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Sep. 7, 1982, Ser. No. 414,966
Int. Cl.³ H01H 9/04
U.S. Cl. 200—302.1 13 Claims





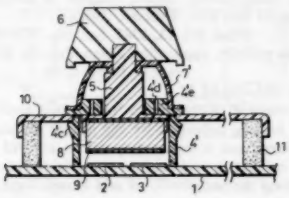
1. A cover for a leaf switch including a body carrying a plurality of resilient switch blades, said cover comprising: a flexible continuous sheath having an open end and a closed end and being adapted to closely receive all of the switch blades therein through said open end, and an enlarged coupling jacket connected to said sheath at said open end for releasably receiving said body therein for support solely thereby, said sheath cooperating with said body and with said coupling jacket completely to enclose the switch blades while permitting deflection of the switch blades by deflection of said sheath.

4,453,061

CAPACITANCE TYPE SWITCH HAVING DUST-FREE INTERIOR

Ryutaro Tamura, 10-12 Kawaharada, Tsuzura-machi, Uchigo, Iwaki-shi, Fukushima-ken, Japan

Filed Jun. 9, 1982, Ser. No. 386,613
Claims priority, application Japan, Jun. 9, 1981, 56-84703[U]; Jun. 9, 1981, 56-84704[U]
Int. Cl.³ H01H 9/04
U.S. Cl. 200—306 6 Claims



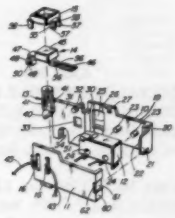
3. A capacitance tpye switch comprising:
- a stem carrying a movable contact and slidably inserted into a switch case;
- a plurality of holes formed in said switch case in an area around said stem so as to permit air to pass into and out from said switch case;
- a resilient cover held to said stem and surrounding said holes, said cover being held in intimate contact with said switch case so that the inside of said switch case can communitcate with the inside of said cover;
- engaging plates disposed on the side walls of said switch case, said engaging plates being spaced from said switch case to form holes for the passage of air into said switch case;
- said engaging plates of said switch case engaging a panel supported in spaced relation on a printed circuit board; and
- a filter made of a seal material placed around said switch case and interposed between said printed circuit board and said panel.

4,453,062

PUSHBUTTON SWITCH AND INTEGRAL LAMP FOR TELEPHONE DIALS

Michael Brown, Nepean, and David W. Johnson, London, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 16, 1982, Ser. No. 450,427
Int. Cl.³ H01H 9/16
U.S. Cl. 200—314 10 Claims



1. A pushbutton switch and integral lamp for telephone dials comprising:
- first and second housing members connected together, to form an enclosure;
- two spring terminals mounted in one of said housing members and extending across to the other of said housing members;
- a lamp positioned and held between said spring terminals;
- a switch positioned and held between said housing members;
- a pushbutton pivotally mounted on a top surface of one of said housing members and including a lever extending over said switch for actuation of said switch on depression of said pushbutton; and
- a part of said pushbutton being translucent and extending over said lamp.

4,453,063

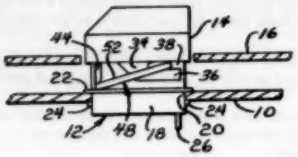
KEYSWITCH CONFIGURATION WITH TORQUE ROD HOLDER

Edward W. Wanatowicz, Jr., Elk Grove Village, and Dennis G. Boma, Streamwood, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 3, 1983, Ser. No. 520,039
Int. Cl.³ H01H 3/12
U.S. Cl. 200—340 10 Claims

9. A keyswitch construction for electronic data entering apparatus comprising a keyswitch having a body, a key top disposed adjacent said body and interconnected therewith for manual movement toward and away from said body, and a torque rod comprising a bight, a pair of side arms on said bight said side arms extending astride said body, and a pair of deflected tips respectively on said arms, said body having a fixed wall thereon parallel to the direction of motion of said key top and a resilient wall parallel to and spaced from said fixed wall defining a channel opening at one end toward said key top, the fixed wall having at least one tooth thereon over which said

bight snaps for retention in said channel, said key top having a pair of projections thereon spaced on opposite sides of said



body and defining slots perpendicular to the direction of motion of said key top, said slots receiving the ends of said torque rod.

4,453,064

ENAMELED METAL TURNTABLE IN A COMBINATION MICROWAVE AND ELECTRIC OVEN

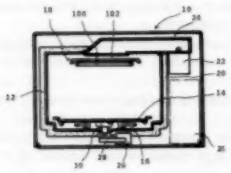
Munemitsu Toyoda, Osaka, and Koichiro Adachi, Kitakatsuragi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 832,960, Sep. 13, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,588

Claims priority, application Japan, Sep. 13, 1976, 51-124043

Int. Cl.³ H05B 6/74

U.S. Cl. 219—10.55 F **7 Claims**



1. A combination microwave and electric oven comprising:

an oven cavity including a bottom wall;

a microwave generation means for microwave cooking purposes;

a turntable disposed in a lower section of said oven cavity and being positioned closely adjacent to said bottom wall;

heater means disposed between said turntable and the bottom wall of said oven cavity for electric cooking purposes;

said turntable comprises a metal turntable of a high thermal conductivity for reflecting microwaves and transmitting heat energy and being coated with a non-metallic enamel material having a thickness of 0.1 through 0.5 mm for preventing an occurrence of sparks while said turntable is driven to rotate during microwave cooking, and for uniformly distributing heat energy when the heater means is energized;

said oven cavity being insulated on at least a portion of an outer surface thereof to maintain said oven cavity at an elevated temperature during electric cooking; and

supporting rollers operatively disposed adjacent said bottom wall of said oven cavity to ensure stable rotation of the enameled metal turntable.

4,453,065

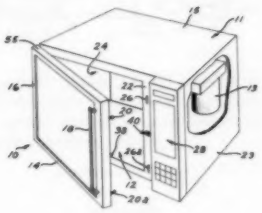
MICROWAVE OVEN DOOR ALIGNING ASSEMBLY

Benson T. Taylor, Jr., Floyd Knobs, Ind., and Ralph G. Hawkins, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 17, 1982, Ser. No. 378,955

Int. Cl.³ H05B 6/76

U.S. Cl. 219—10.55 D **5 Claims**



1. A microwave oven having a cabinet with top, bottom, rear and side walls defining an oven cavity with an opening in the front face thereof, a door movably mounted to said cabinet by hinges for selectively closing said opening, electrically operable microwave energy generating means for supplying microwave energy to said cavity, and an electrically operable circuit including switch means for providing electric power from an external source to said electrically operable microwave energy generating means, and a door aligning assembly for properly maintaining the door in parallel alignment relative to the top and bottom cabinet walls, the improvement comprising:

a centering prong rigidly mounted on the door and projecting beyond the inside surface of the door,

an opening in the front face remote from the door hinges,

a clip mounted to the oven behind the front face, said clip having an opening in alignment with the front face opening,

a centering prong receiving receptacle having a rigid square body portion removably inserted in the clip opening and means to secure the receptacle to the clip, said receptacle having a square opening to receive the centering prong which opening is offset from the center of the receptacle such that two opposite sides of the opening are equal distance from the center and the other two opposite sides of the opening are of unequal distance from the center.

4,453,066

METHOD AND APPARATUS FOR THAWING BY HIGH FREQUENCY HEATING

Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 13, 1982, Ser. No. 397,698

Claims priority, application Japan, Jul. 20, 1981, 56-113976

Int. Cl.³ H05B 6/68

U.S. Cl. 219—10.55 M **2 Claims**

1. A method of thawing a frozen food stuff in a high frequency heating apparatus having a high frequency oscillator, input means and a microcomputer to control said high frequency oscillator, said method comprising the steps of:

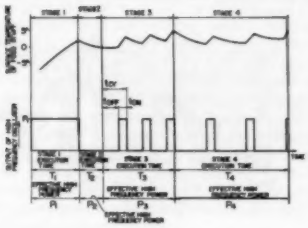
inputting the weight W of said frozen food stuff into said input means;

subjecting said frozen food stuff to high frequency radiation for a first time period T_1 in a first stage, said high frequency oscillator oscillating continuously during said first time period T_1;

stopping generation of said high frequency radiation for a second time period T_2 in a second stage by terminating oscillation of said high frequency oscillator; and

subjecting said frozen food stuff intermittently to said high frequency radiation for a third time period T_3 in a third

stage, said high freqency oscillator repeating during said third time period T_3 an operation cycle t_{cy3} consisting of a constant on-period t_{on3} during which said high frequency oscillator generates high frequency radiation and a constant off period T_{off3} during which said oscillator does not generate radiation, whereby said first, second and third time periods T_1, T_2 and T_3 are calculated from the equation



$$T_n = t_n + K_n W,$$

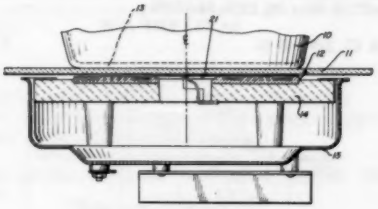
where T_n is the time period of each of n thawing stages, t_n is a constant equal to the standard radiation time for each of said n stages, and K_n is a constant having the dimensions of time per unit weight W of said frozen food stuff, said constants t_n and K_n being stored in said microcomputer.

4,453,067

INDUCTION HEATING COIL

Joseph Karklys, St. Joseph, and Mikayel Semerciyan, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 11, 1982, Ser. No. 338,667
Int. Cl.³ H05B 6/40
U.S. Cl. 219—10.49 R **20 Claims**



1. In a cooking range or the like, an induction heating coil for use in heating a cooking utensil, said coil comprising

a spiral of electrically conductive wire having at least three radially related sections including

a radially outermost section having a plurality of closely spaced turns,

a radially innermost section having a plurality of closely spaced turns, and

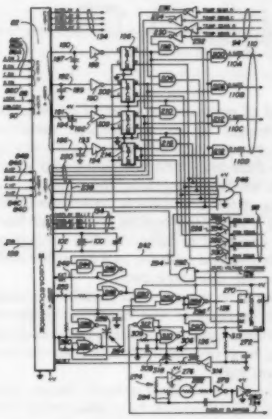
a radially intermediate section having a plurality of turns more widely spaced than said radially outermost and radially innermost turns.

4,453,068

INDUCTION COOK-TOP SYSTEM AND CONTROL

Raymond M. Tucker, and Clarence L. Dyer, both of Cleburne, Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Continuation of Ser. No. 35,084, May 1, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,449
Int. Cl.³ H05B 6/06
U.S. Cl. 219—10.77 **3 Claims**



1. In an induction cooking system, the combination comprising:

a plurality of induction heating coils;

energization means for electrically energizing said plurality of induction heating coils including a source of AC voltage for generating an AC voltage potential having a periodic waveform;

control means for generating energization control signals;

signal means for generating energization signals for actuating and controlling said energization means to thereby vary the energization of said plurality of induction heating coils, said energization signals having a frequency substantially higher than that of said AC voltage, said induction coils resonated at said higher frequency;

gating means responsive to said control means for gating said energization control signals to said energization means;

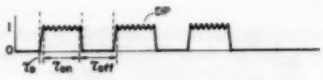
detector means for detecting a zero voltage crossing of said AC voltage potential and for generating a zero crossing output pulse in response to each detection of a zero voltage crossing to thereby indicate the presence of said AC voltage potential; and

circuitry responsive to the presence of said zero crossing output pulses generated by said detector means, said circuitry inhibiting said signal means from generating said energization signals when said zero crossing output pulses are not present thereby deactivating said energization means in the absence of said AC voltage potential, said circuitry reactivating said energization means when said AC voltage is restored and a zero crossing output pulse is generated to thereby reduce the voltage stress on said energization means.

4,453,069
EDM PULSE FORMING CIRCUIT ARRANGEMENT AND METHOD

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 23, 1982, Ser. No. 351,532
Claims priority, application Japan, May 2, 1981, 56-67348; Aug. 27, 1981, 56-135214
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 P 20 Claims



1. A method of producing a series of discrete, time-spaced electrical discharges having a discharge duration τon and interval τoff between a tool electrode and a conductive workpiece across a dielectric-filled machining gap to machine the workpiece, the method comprising the steps of:

(a) providing on/off controllable power switch means energizable by a switching control circuit and having output terminals arranged in circuit with a voltage source and electrically coupled with the tool electrode and the workpiece via a gap discharge circuit;

(b) generating at an input to said switching control circuit a succession of discrete and time-spaced quantum signal pulses having a quantum duration τon-q and a pulse interval τoff-q, both of which are less than the duration τon and interval τoff;

(c) gating, in said switching control circuit, said quantum signal pulses in succession for a time period Ton and with a time interval Toff to develop a series of time-spaced trains (Ton, Toff) of such successive, discrete quantum signal pulses (τon-q, τoff-q) therein, said time period Ton and time interval Toff being greater than said quantum pulse duration τon-q and interval τoff-q;

(d) turning said power switch means on and off with said successive, time-spaced quantum signal pulses of the duration τon-q and interval τoff-q in each train (Ton) to develop a train (Ton) of successive, discrete output voltage pulses of the quantum duration τon-q and a short time interval from said voltage supply across said machining gap; and

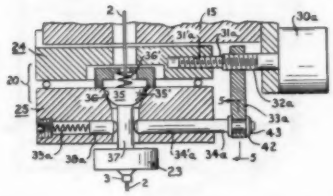
(e) providing impedance means in said gap discharge circuit such that said successive discrete voltage pulses of the short pulse interval in a train result in a substantially continuous unitary, pulsed current flow through the machining gap within said time period Ton, constituting each individual machining electrical discharge of said duration τon.

4,453,070
APPARATUS FOR ORIENTING THE WIRE ELECTRODE SUPPORT AND GUIDE MEMBER AND THE MACHINING FLUID NOZZLE OF A TRAVELLING WIRE EDM APPARATUS

Benno I. Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Jul. 6, 1982, Ser. No. 395,299
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 W 3 Claims

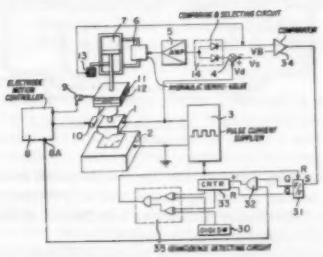
1. In a travelling wire EDM apparatus wherein a workpiece is cut by electrical discharged between an electrode wire and said workpiece, said apparatus comprising a pair of electrode wire guide member, support means for said workpiece and means for relatively displacing said electrode wire guide members and said workpiece support means such as to cut said workpiece according to a desired shape, and a mechanism for orienting at least one unitary assembly comprising one of said electrode wire guide members and a nozzle for injecting machining fluid in a machining zone between said electrode wire and said workpiece, said mechanism comprising a holder for said unitary assembly, a table on which said holder is mounted, swivelling means connecting said holder to said table, a pair of cross-slides supporting said table, a first servo motor driven leadscrew for linearly displacing one of said cross-slides relative to the other, a second servo motor driven leadscrew for linearly displacing the other of said cross-slides relative to said table, such that the direction of displacement of each of said cross-slides is transverse to the longitudinal axis of said electrode wire for causing the electrode-wire to be inclined relative to the workpiece, a second screwthread on each of said leadscrews having a pitch different from the pitch of the screwthread displacing each of said cross-slides, said second screwthread displacing a nut in the same direction as the direction of displacement of said table at a speed different from the speed of displacement of said table, and means connecting each of said nuts to said unitary assembly holder such as to swivel said unitary assembly and maintain said unitary assembly constantly aligned automatically with the longitudinal axis of said electrode wire while passing through the machining zone between the electrode wire and the workpiece.



4,453,071
ELECTRIC DISCHARGE MACHINE INCLUDING ROCKING MOTION FINE MACHINING AND CONTROLS THEREFORE

Toshiro Oizumi; Tetsuro Ito, and Shigeo Yamada, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 232,030, filed as a PCT JP80/00112, May 27, 1980, publish as WO80/02665, Dec. 11, 1980 § 102(e) date
This application Sep. 23, 1982, Ser. No. 422,086
Claims priority, application Japan, May 30, 1979, 54-67255; May 30, 1979, 54-67256; May 30, 1979, 54-67257; May 30, 1979, 54-67258; May 30, 1979, 54-67259
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 G 8 Claims



1. An electric discharge machine comprising: an electric power source for supplying an electric discharge machining energy between an electrode and a workpiece to be machined; feeding means for effecting a relative feeding motion between said electrode and said workpiece in a certain direction; and means for effecting predetermined relative rocking motions as

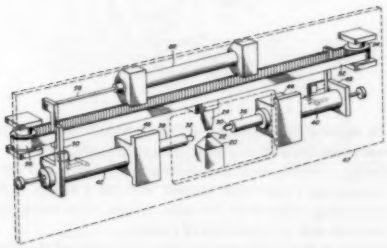
have a directional component perpendicular to said certain direction, whereby said electric discharge machining energy is supplied from said electric power source, while effecting the rocking motions by said rocking motion effecting means, thereby to make it possible to accomplish a rocking machining operation, wherein the improvement comprises: position detecting means for detecting the positional relationship in said certain direction between said electrode and said workpiece and producing an output signal indicative of said positional relationship; means for detecting the state of the machining gap between said electrode and said workpiece and for producing and output signal indicative of said machining gap state; holding means for controlling said relative feeding motion effecting means in response to the output signal of said position detecting means and the output signal of said machine gap state detecting means thereby to hold said electrode and said workpiece in said predetermined positional relationship in said certain direction and then to advance said electrode only in said certain direction in dependence on the state of said machining gap as indicated by said output signal of said machining gap state detecting means; and means for controlling said rocking motion effecting means in response to the output signal of said machining gap state detecting means thereby to change the locus of said rocking motions.

4,453,072

WELDING METHOD AND APPARATUS SUITABLE FOR FORMING LINKS IN JEWELRY

Charles F. Middleton, Jr., Sudbury, and Arthur J. Guidi, Westford, both of Mass., assignors to Creative Fastening Methods, Inc., Wayland, Mass.

Filed Dec. 22, 1981, Ser. No. 333,422
Int. Cl.³ B23K *11/00*
U.S. Cl. 219—86.23 **8 Claims**



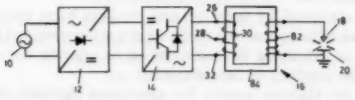
4. Welding appartus as claimed in claim 1 wherein the drive means comprises a common belt or chain drive for the electrode rams.

4,453,073

HIGH FREQUENCY WELDING APPARATUS

Gordon L. Bredenkamp, Roodepoort, South Africa, assignor to Crucible Societe Anonyme, Luxembourg

Filed Dec. 16, 1981, Ser. No. 331,152
Claims priority, application South Africa, Dec. 22, 1980, 80/7981
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—130.1 **2 Claims**



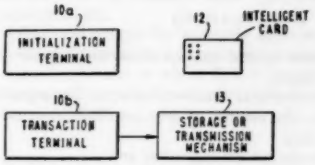
1. A welding apparatus comprising:
a transformer having a center-tapped primary winding and a secondary winding with output terminals for electrical connection to an electrode and work to be welded;
means for applying a D.C. voltage to the center tap;
at least two transistors whose collectors are respectively connected at opposite ends of the primary winding;
a base winding inductively coupled to the transformer and interconnecting the bases of the transistors, so that the two transistors are alternately turned on and saturated; and
switching means for alternatively applying a potential to the base of each transistors to alternatively turn each transistor off in response to its collector/emitter voltage reaching a predetermined voltage; wherein the switching means comprises an FET associated with each transistor, wherein each FET has its source terminal connected to the potential at its base of its associated transistor, its gate terminal connected through a capacitor to the collector of its associate transistor, and its drain terminal connected to the base of its associated transistor.

4,453,074

PROTECTION SYSTEM FOR INTELLIGENT CARDS

Stephen B. Weinstein, Summit, N.J., assignor to American Express Company, New York, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,705
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—380 **19 Claims**



1. A system for allowing authorized users of portable intelligent cards to effect transactions via at least one transaction terminal comprising a plurality of user intelligent cards each having stored therein a code which is the encryption of a combination of a password associated with the respective user and a reference text which is common to all users, the codes stored in all of said cards having been encrypted with the same private key which is associated with the public key of a public-key cryptosystem pair; and at least one transaction terminal having means for allowing a card user to inut a password, and means for controlling (1) the retrieval of the code stored in an inserted card, (2) the decryption of the retrieved code with the use of said public key to derive a password part and a text part, (3) the comparisons of the derived password part with the inputted password, and the text part with said common reference text, and (4) the effecting of a transaction only if both of said comparisons are successful.

4,453,075

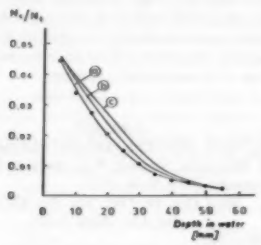
METHOD FOR LOCALIZING A REGION IN THE HUMAN BODY, IN PARTICULAR VENOUS THROMBI, BY THE UPTAKE OF A RADIOACTIVE SUBSTANCE, PARTICULARLY ^{125}I-FIBRINOGEN

Sören Mattsson, Persikevägen 43, S-223 55 Lund; Nils-Gunnar Holmer, Gilleskroken 7, S-222 47 Lund; Kurt Bernstein, Näktergalsvägen 26, S-230 50 Bjärred; Ulf Ulmsten, Geijersgatan 39, S-216 18 Malmö; Birger Astedt, Bokgatan 11, S-230 40 Bara, and Lars Jacobsson, Aspnäsvägen 96, S-582 62 Linköping, all of Sweden

Division of Ser. No. 195,964, Oct. 10, 1980. This application Apr. 4, 1983, Ser. No. 481,977
Claims priority, application Sweden, Oct. 17, 1979, 7908576-7
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 S **6 Claims**

1. A method for localizing the depth of a region in the

human body by the detection of a compound marked with a radioactive substance by means of a detector device for perceiving disintegration radiation from the region, comprising the steps of distinguishing between disintegrations of a first type which give rise to substantially non-coincident photons of an energy in a first interval and disintegrations of a second type which give rise to the mission of substantially coincident photons of a total energy in a second interval substantially separate from said first interval, counting the number of disintegrations of each of said types, and calculating the distance from the detector to the region from the empirical formula:



$$d = k_{1\cdot ln}(k_2 + N_t/N_c)$$

where d = the distance from the detector device to said region

N_t = the total number of detected disintegrations

N_c = the number of detected disintegrations of the second type

ln = the natural logarithm; and

k_1 and k_2 are experimentally determined constants.

4,453,076

METHOD AND APPARATUS FOR REDUCING THE DEAD-TIME OF A GEIGER-MüLLER, GAMMA-RAY DETECTOR TUBE

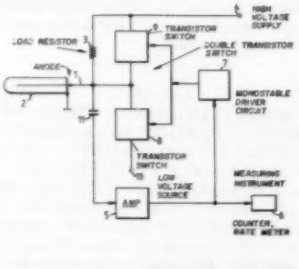
Kenneth Jackson, Yarm, and Nigel P. Pickett, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 24, 1981, Ser. No. 286,716

Claims priority, application United Kingdom, Aug. 7, 1980, 8025845

Int. Cl.³ G01T *1/175*

U.S. Cl. 250—374 **8 Claims**



1. A method for reducing the "dead-time" of a Geiger-Müller tube to below 20 microseconds following the initiation of ionization of gas in the tube and an initial drop in anode voltage which comprises the steps of:

(1) providing sources of relatively high and relatively low voltage;

(2) amplifying the initial fall in the anode voltage of a Geiger-Müller tube caused by a gamma-ray photon penetrating the wall of said tube and ionising the gas therein;

(3) using the thus-amplified signal to switch the voltage on the anode of the Geiger-Müller tube to a lower value whereby to inhibit further ionisation of the gas contained in the tube; and

(4) after a short period of time in the range 3 to 10 microseconds, returning the initial higher voltage to the anode of the Geiger-Müller tube.

4,453,077

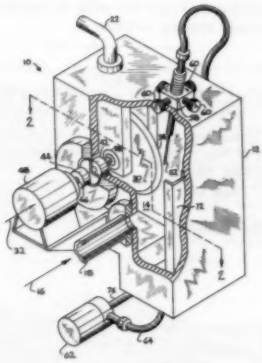
LIQUID-FILM ELECTRON STRIPPER

Beat T. Leemann, Walnut Creek, and Roland B. Yourd, Kensington, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 9, 1982, Ser. No. 356,581

Int. Cl.³ H01J *3/04*

U.S. Cl. 250—423 R **12 Claims**



8. A method of producing a thin freestanding liquid film in an evacuated vacuum chamber, comprising the steps of:

rotating a rotably mounted member on its axis, said member having an outer edge shaped to form a sharp, radially-extending edge with the sides of said edge being roughened to aid in dispersion of liquid;

directing a stream of liquid at the outer edge of the rotating disc, said stream of liquid having an inwardly-directed radial velocity component so that liquid spun from the rotating member forms a thin freestanding liquid film.

4,453,078

ION SOURCE

Ryuichi Shimizu, Minooshi, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,940

Claims priority, application Japan, Jun. 12, 1981, 56-90500

Int. Cl.³ H01J *27/22*

U.S. Cl. 250—425 **8 Claims**

1. An ion source having elements positioned along an optical axis comprising:

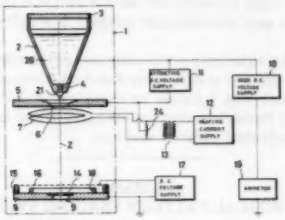
(a) a reservoir for holding a compound of an alkali metal, said reservoir forming a capillary from the interior to the exterior of the reservoir, said capillary being symmetrical with the optical axis of the source at the open end thereof;

(b) an extracting electrode having an opening spaced from the capillary of the reservoir;

(c) an electron source for generating thermal electrons, spaced beyond the extracting electrode from the reservoir being at about the same potential as the extracting electrode such that electrons emitted from the source are

accelerated toward the opening of the reservoir for bombarding the compound to heat and ionize it;

(d) a grounded electrode having an opening, said grounded electrode being spaced beyond the electron source from the reservoir;



(e) a high D.C. voltage supply for maintaining the reservoir at positive high potential relative to the grounded electrode; and

(f) an extracting D.C. voltage supply for maintaining the extracting electrode at negative potential relative to the reservoir.

4,453,079

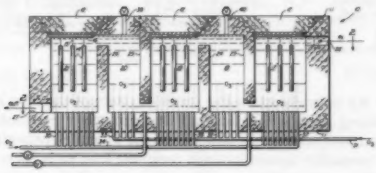
IRRADIATOR APPARATUS AND METHOD

David D. Woodbridge, West Palm Beach, Fla., assignor to Radiolysis, Incorporated, Kirkland, Wash.

Filed Jan. 28, 1982, Ser. No. 343,530

Int. Cl.³ B01J *19/08*

U.S. Cl. 250—432 R **17 Claims**



1. An irradiator apparatus comprising in combination:

a casing having an input thereinto and an output therefrom;

a plurality of connected chambers formed in said casing by walls formed in said casing;

at least one gamma radiation source located in a plurality of said chambers to form a plurality of irradiation chambers;

said plurality of chambers including at least one gas treatment chamber, the walls between said gas treatment chamber and said irradiation chamber being a gamma radiation blocking material;

a gas input line connected to said gas treatment chamber for feeding a gas thereto; and

gas escape means for allowing the escape of gas from said plurality of chambers, whereby a fluid can be treated with a series of gamma radiation and gas contact treatments.

4,453,080

TEMPERATURE CONTROL OF A WORKPIECE UNDER ION IMPLANTATION

Edward H. Berkowitz, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

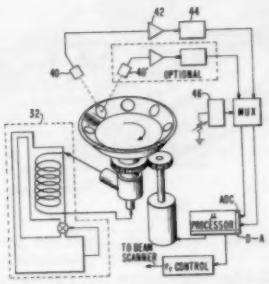
Filed Jul. 20, 1981, Ser. No. 284,915

Int. Cl.³ G01N *21/00*

U.S. Cl. 250—443.1 **9 Claims**

1. In an end station for presenting a generally planar article to an ion beam for ion implantation, said end station comprising mounting means for rotating said article through said ion beam at a frequency ω_p and maintaining the position of said articles on said mounting means by centrifugal force acting on said article, mounting means further comprising heat sink means for receiving heat dissipated in said articles from ion implantation, the improvement comprising

a compliant thermally conductive resilient layer disposed between said heat sink and said article and said article maintained in intimate contact therewith by the action of



said centrifugal force, means for monitoring the temperature of said article and generating a signal representative of said temperature and

means responsive to said signal for selectably adjusting the force exerted by said article on said thermally conductive member whereby the rate at which heat is transported through the thermally conductive member to the heat sink is selectably controlled.

4,453,081

CONTAINER FOR THE TRANSPORTATION AND/OR STORAGE OF RADIOACTIVE MATERIAL

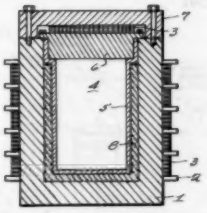
Richard Christ, Bruchköbel; Klaus Wegner, and Hartmut Kroll, both of Hanau, all of Fed. Rep. of Germany, assignors to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,440

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012256

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—506.1 **22 Claims**



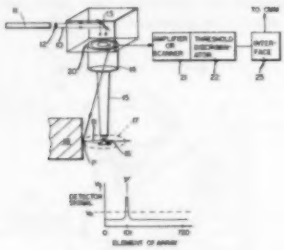
1. A container suitable for the transportation or storage of radioactive materials, particularly irradiated nuclear fuel elements and highly active waste consisting essentially of a base body having a first shielding means for γ- and n-radiation and an internal covering of corrosion resistant material and having a second n-shielding layer, said second shielding layer being between the internal covering and the base body and being made of a graphite containing material, consisting essentially of a hardened mixture of graphite powder and a binder.

4,453,082

COORDINATE MEASURING METHOD AND DEVICE

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Nov. 14, 1980, Ser. No. 207,081
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—561 **19 Claims**



1. Apparatus for optically sensing the presence or location of an object comprising:

means for directing light along a reference axis;

means for directing said light simultaneously 360° outwardly from said reference axis whereby a zone of light will be formed on a surface of an object located in the path of said outwardly directed light;

light detector means; and

means for forming an image of said zone of light on said light detector means, said light detector means being constructd and arranged such that said image is formed thereon only when a surface of an object is located at a pre-determined position in said light path, whereby the presence or location of said object at said pre-determined position in said light path is indicated by the presence of said image on said light detector means; and

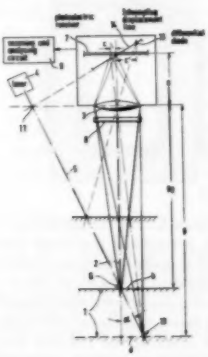
means for detecting the presence of said image.

4,453,083

APPARATUS FOR THE DETERMINATION OF THE POSITION OF A SURFACE

Peter Bohländer, Dusseldorf, and Heinz-Peter Hippler, Dortmund-Dorstfeld, both of Fed. Rep. of Germany, assignors to Betriebsforschungsinstitut VDEh Institut fur angewandte Forschung GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,039
Int. Cl.³ G01C *3/08*
U.S. Cl. 250—561 **6 Claims**



1. Apparatus for determining the position of a surface illuminated by a beam from a laser, said apparatus employing an optical lens which has an optical axis and a principal plane to provide an image of the illuminated surface at a photoelectric receiver, said apparatus comprising:

means for focusing the laser beam on said surface at a constant angle between said surface and said laser beam;

wherein said photoelectric receiver is a differential diode; and

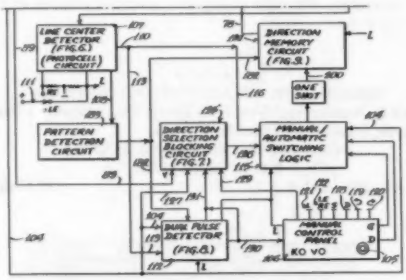
means for adjustably positioning said differential diode along a straight line at adjustable distances from said optical axis and said lens, wherein an extension of said straight line passes through an intersection point of said laser beam and said principal plane of said lens.

4,453,084

OPTICAL PATTERN TRACING SYSTEM

Frans Brouwer, Glencoe, Ill., assignor to ESAB, North America, Inc., Ft. Collins, Colo.

Filed Sep. 15, 1981, Ser. No. 302,652
Int. Cl.³ G05B *1/00*
U.S. Cl. 250—202 **27 Claims**



1. An optical pattern-line tracing system of the type having a tracing head with a scanner that projects a photocell in a closed path scan on the pattern and the photocell provides two line crossover signals for each complete scan path, including a signal generator for providing two out of phase signals, a sampling circuit for selecting instantaneous values of the out of phase signals to derive control signals for coordinate servomotors that control the position of the tracing head over the pattern-line, and further including means for developing and applying manual control signals to the sampling circuit to drive the scanner toward the pattern-line, characterized by means for selecting the direction of movement of the tracing head along the pattern-line prior to the approach of the scan path to the pattern-line and including means for automatically catching the pattern-line after approach at substantially any angle.

4,453,085

ELECTRO-OPTICAL SYSTEMS FOR CONTROL OF ROBOTS, MANIPULATOR ARMS AND CO-ORDINATE MEASURING MACHINES

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed May 11, 1981, Ser. No. 262,492
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **11 Claims**

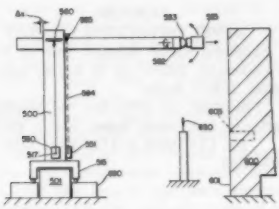
1. A method for correcting position data of a machine having a member moveable in at least two co-ordinate axes, said machine comprising encoder means for providing rough position data to indicate the rough position of said member in each of said axes, said method comprising the steps of:

moving said moveable member to a position data correction location;

electro-optically determining the actual position of said

member in at least one axis relative to a reference point external to said machine;

generating a signal representative of the electro-optically determined actual position of said member in the determined axis;



utilizing said signal to correct the rough position data in said encoder means for the determined axis; and

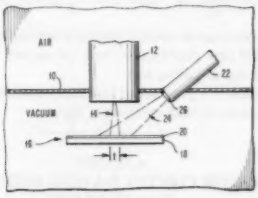
further moving said member to a precise desired position in the determined axis as indicated by said corrected position data.

4,453,086

ELECTRON BEAM SYSTEM WITH REDUCED CHARGE BUILDUP

Warren D. Grobman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,465
Int. Cl.³ C08J *7/10*
U.S. Cl. 250—307 **27 Claims**



1. A method for testing a mask to be used in a lithographic process wherein radiation is directed onto said mask, said mask including a patterned layer of material on a substrate in which photoconductivity and photoemissivity cannot be easily induced, including the steps of:

coating said patterned layer with a thin layer of a low work function material in which photoemission can readily be induced, said coating being substantially transparent to an electron beam and to said radiation,

scanning said patterned layer with an electron beam to test for defects in said patterned layer, said electron beam causing a buildup of electrons on the surface of said coated mask, and

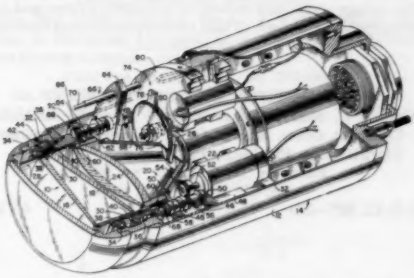
directing ultraviolet light onto said coated mask in an area overlapping the area of said mask being hit by said electron beam to cause photoemission of electrons from said thin coating layer in an amount to produce a positive charge thereon sufficient to balance the negative charge induced by the incidence of electrons from said electron beam.

4,453,087

SCANNING MECHANISM FOR FLIR SYSTEMS

James Linick, 4611 San Miguel, Tampa, Fla. 33609

Filed Jul. 27, 1981, Ser. No. 286,768
Int. Cl.³ H01J *31/49*; G01J *1/00*
U.S. Cl. 250—334 **10 Claims**



1. A scanning mechanism for scanning an image onto a detector array, comprising in combination:

a first prism having a first wedge angle and a first index of refraction;

a second prism having a second wedge angle and a second index of refraction and positioned behind said first prism;

said second prism being tilted with respect to the axis of the detector array by a predetermined tilt angle;

the tilt angle of said second prism and the indices of refraction and the wedge angles of each said prisms being selected to produce an elliptical pattern having a substantially flat configuration with two parallel lines which remain substantially parallel over the majority of the length of said elliptical pattern;

the detector array including a column of stacked detector elements of uniform height with each detector element being spaced apart from one another by a distance equal to the height of the detector elements;

said parallel lines of said elliptical pattern being separated by a distance equal to the height of the detector elements; and

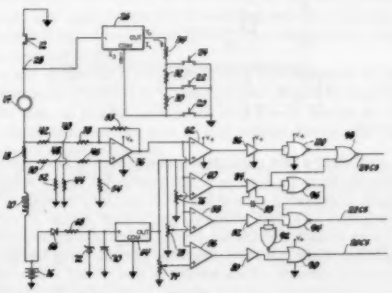
means for counterrotating said prisms whereby the image is scanned in an elliptical pattern onto the detector array by a 2:1 interlacing technique.

4,453,088

MULTIPLEX SYSTEM FOR STEERING WHEEL MOUNTED SWITCHES

George R. Moore, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 10, 1982, Ser. No. 448,772
Int. Cl.³ H02J *1/00*
U.S. Cl. 307—10 R **4 Claims**



1. In a motor vehicle having a horn circuit including a horn

relay connected in series with a horn switch, through a slip ring, the improvement comprising a resistor connected in series with said horn relay, a plurality of auxiliary switches, means connecting said auxiliary switches to a junction between said slip ring and said horn switch for drawing predetermined load currents through said resistor in response to actuation of selected ones of said auxiliary switches, means responsive to the voltage across said resistor for providing a command signal corresponding to each of said predetermined load currents.

4,453,089

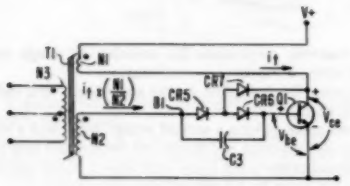
TRANSISTOR BASE DRIVE CIRCUIT

Kenneth C. Shuey, Cridersville, and David L. Stechschulte, Columbus Grove, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1982, Ser. No. 368,941

Int. Cl.³ H03K *17/60, 3/33*

U.S. Cl. 307—253 **6 Claims**



1. A semiconductor switching circuit comprising:
a transistor having a base, an emitter, and a collector;
means for supplying a base drive current to said transistor;
a circuit branch including the series connection of a first diode and a second diode, said circuit branch being connected between said means for supplying base drive current and said transistor base;
a capacitor connected in parallel with said circuit branch; and
a third diode connected between the connecting point between said first and second diodes and said transistor collector.

4,453,090

MOS FIELD-EFFECT CAPACITOR

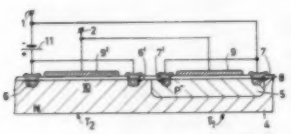
Adrianus Sempel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,459

Claims priority, application Netherlands, Jul. 4, 1980, 8003874

Int. Cl.³ H01L *27/08, 29/78*

U.S. Cl. 307—303 **6 Claims**



1. A field-effect capacitance comprising a first region of a first conductivity type in a semiconductor layer, which first region is provided with at least one contact electrode which is connected to a first terminal, and which region is provided with an insulated electrode having a first electrode portion on said first region, said first electrode portion being connected to a second terminal, characterized in that in said semiconductor layer there is provided a second semiconductor region of a second conductivity type opposite to that of the first conductivity type, which second region is provided with at least one contact electrode which is coupled to the first terminal and with a second portion of said insulated electrode arranged on said second region, the second portion of said insulated electrode being connected to the second terminal.

4,453,091

LEVEL DETECTING CIRCUIT

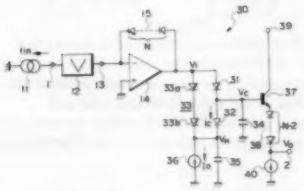
Masayuki Katakura; Kenzo Akagiri, both of Yokohama, and Motomi Ookouchi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 360,903

Claims priority, application Japan, Apr. 2, 1981, 56-49590

Int. Cl.³ H03K *5/153;* **G06G** *7/24*

U.S. Cl. 307—350 **17 Claims**



1. A level detecting circuit for producing a level detected output signal in response to an input signal, comprising:
means for logarithmically converting said input signal to produce a logarithmically converted signal;
first means forming a first signal path supplied with said logarithmically converted signal and having a first saturation current;
second means forming a second signal path supplied with said logarithmically converted signal and having a second saturation current greater than said first saturation current;
reference current means for supplying a reference current to said first and second signal paths;
first capacitance means having a first capacitance and connected to said first signal path for producing an integrated signal;
second capacitance means having a second capacitance less than said first capacitance and connected to said first and second signal paths; and
output means for producing said level detected output signal in response to said integrated signal.

4,453,092

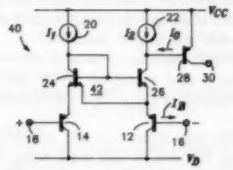
COMPARATOR CIRCUIT HAVING REDUCED INPUT BIAS CURRENT

Eric D. Joseph, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1982, Ser. No. 453,380

Int. Cl.³ H03K *5/153, 5/24, 17/72*

U.S. Cl. 307—355 **5 Claims**



1. Comparator circuit, comprising:
first and second conductors;
first and second transistors of a first conductivity type, each having first and second main electrodes and a control

electrode, said second main electrodes being coupled to said first conductor, said control electrodes being respectively coupled to first and second inputs of the comparator circuit;

current source means coupled to said second conductor at which is supplied an operating potential for producing current flow at first and second terminals thereof;

circuit means for coupling said second terminal of said current source means to an output of the comparator; and

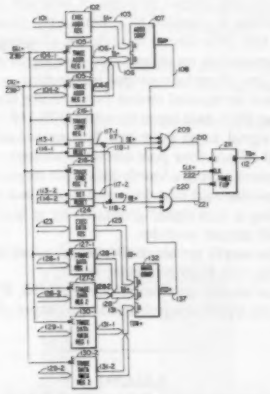
level shift circuit means coupled between said first main electrodes of said first and second transistors and said first and second terminals of said current source means for producing a voltage level shift therebetween which includes a third transistor of a second conductivity type having first and second main electrodes and a control electrode, said first and second main electrodes being coupled between said first main electrode of said second transistor and said second terminal of said current source means, said control electrode being coupled to said first terminal, first diode means coupled between said control electrode and said first main electrode of said third transistor.

4,453,093

MULTIPLE COMPARISON CIRCUITRY FOR PROVIDING A SOFTWARE ERROR TRACE SIGNAL

Daniel A. Boudreau, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 2, 1982, Ser. No. 364,587
Int. Cl.³ H03K *5/24, 19/20*
U.S. Cl. 307—440 **13 Claims**



8. An apparatus for performing a logical NOT equivalence function between a first value and a second value comprising:

A. bistable means having a first state and a second state;

B. comparator means having a first input for receiving the first value and a second input for receiving the second value, said comparator means for generating an equal signal at an output, the equal signal being in a first state if the first value is equal to the second value and in a second state if the first value is not equal to the second value; and

C. control means, a first input of said control means coupled to the output of said comparator means, an output of said control means coupled to said bistable means, said control means for setting said bistable means to the first state during a first comparison if the equal signal output by said comparator means is in the first state and for setting said bistable menas to the second state during a second comparison if the equal signal output by said comparator means is in the first state,

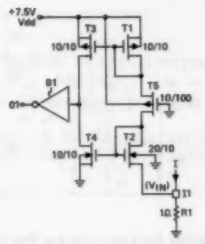
whereby at the completion of the second comparison said bistable means will be in the second state if the first value is equal to the second value and said bistable means will be in the first state if the first value is not equal to the second value.

4,453,094

THRESHOLD AMPLIFIER FOR IC FABRICATION USING CMOS TECHNOLOGY

William Peil, North Syracuse; Thomas A. Brown, Fulton, and Marc A. Dissosway, Liverpool, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,696
Int. Cl.³ H03K *19/003, 17/04, 19/017;* **G11C** *27/00*
U.S. Cl. 307—451 **14 Claims**



1. A threshold amplifier comprising:

a. a first and a second terminal for connection to a bias supply,

b. a first series circuit connected between said first and second supply terminals comprising:

i. first FET device having the source connected to said first supply terminal,

ii. a diode connected second FET device having the drain and gate connected together, the interconnection being conductively connected to the drain of said first device,

iii. a current sensing resistance connected between the source of said second device and said second supply terminal, and

iv. means to establish a desired current in said first series circuit; and

c. a second series circuit connected between said first and second supply terminals comprising:

i. a third, FET device having the source connected to said first supply terminal, and the gate of said third FET device is conductively connected to the gate of said first FET device, and

ii. a fourth FET device having the drain thereof connected to the drain of said third device, the source of said fourth device being connected to said second supply terminal,

said first and third devices being of the same polarity type, and second and fourth devices being of the same polarity type, and complementary to said first and third devices,

d. said first and third devices having fixed conductivity ratio in each series path,

e. means connecting the gate of said fourth device to the gate-drain connection of said second device to equalize the gate to source voltage of said fourth device to the voltage between the gate of said second device and said second supply terminal,

f. an input terminal for coupling a current to be sensed into said current sensing resistance, the voltage drop attributable thereto displacing the voltage of the source of said second device in relation to the voltage at said second supply terminal, and in turn the gate to source voltage of said fourth device, said fourth device being in a low conduction state in the absence of sensed current and in a high conduction state when said sensed current exceeds a given value, said third device being capable of conduction throughout, and

g. output means coupled to the drain connection of said third and fourth devices to provide a first digital output level when the sensed current is below said given value and a second digital output level, when the sensed current is above said given value.

4,453,095

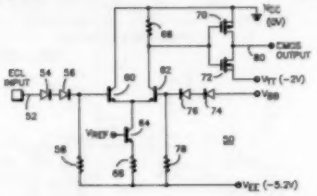
ECL MOS BUFFER CIRCUITS

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 16, 1982, Ser. No. 399,028

Int. Cl.³ H03K *19/092, 19/086, 19/094*

U.S. Cl. 307—475 **16 Claims**



1. An input buffer for converting a first logic voltage signal having a respective logic high level and a logic low level present on an input line to a second logic voltage signal having a respective logic high level and a logic low level present on an output line, wherein the voltage difference between said first signal high level and low level is different from the voltage difference between said second signal high level and low level, said respective logic high levels being substantially the same, comprising:

first and second switching devices having common emitter contacts and respective first and second collector and base contacts thereof, said first and second collector contacts being respectively connected to a collector voltage source line and an output node,

a current source coupling said common emitter contacts to an emitter voltage source line,

first and second level shifting means for coupling said input line and a logic reference voltage respectively to said emitter voltage source line for biasing said first and second base contacts,

a load device coupling said output node to said collector voltage source line, and

a logic inverter coupling a supply voltage line to said collector voltage source line and having input and output terminals thereof, said input terminal being connected to said output node and said output terminal being said output line.

4,453,096

MOS TRANSISTOR TYPE INTEGRATED CIRCUIT FOR THE EXECUTION OF LOGICAL OPERATIONS ON A PLURALITY OF DATA SIGNALS

Claude J. P. F. Le Can, Beek, and Karel Hart, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 843,982, Oct. 20, 1977, abandoned. This application Apr. 1, 1980, Ser. No. 136,237

Claims priority, application Netherlands, Nov. 4, 1976, 7612223

Int. Cl.³ H03K *19/094, 19/173, 19/20*

U.S. Cl. 307—448 **3 Claims**

1. An integrated circuit for the execution of logical operations on at least three data signals, said circuit comprising:

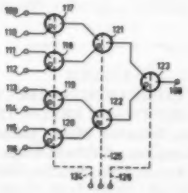
at least a first and a second four pole circuit module **(121, 123)**, each module being a series combination of a first and a second MOS-transistor of a single conductivity type between a first end and a second end;

each said series combination having a first data input terminal at its first end and a second data input terminal at its second end for receiving respective data signals of a first amplitude range;

with each said series combination said first MOS-transistor having a first gate electrode and said second MOS-transistor having a second gate electrode for receiving mutually inverse control signals of a second amplitude range, said second amplitude range encompassing and being larger than said first amplitude range;

each said series combination having a first data output terminal situated at the junction of said two MOS-transistors for outputting a data signal of said first amplitude range;

wherein a first value of said control signal applied to a series combination renders exclusively a current path between said first data input termial and said first data output terminal conductive, while a second value of said control signal renders exclusively a current path between said second data input terminal and said first data output terminal conductive;



wherein the data output terminal of said first four pole circuit module is coupled to a data input terminal of said second four pole circuit module for effecting a two stage logical operation on at least one data signal receivable on at least one of said data input terminals;

wherein said integrated circuit furthermore comprises:

at least one third data input terminal **(109-116)** for receiving a data signal to at least one first or second data input terminal of said four pole circuit modules;

register means having a fourth data input terminal connected to at least one said first data output terminal for temporarily storing a data signal generated by at least one of said four pole circuit modules;

at least two supply terminals **(54, 56)** for receiving power for powering said register means; and

at least one second data output terminal **(55, 57)** for outputting a data signal receivable from an output of said register means.

4,453,097

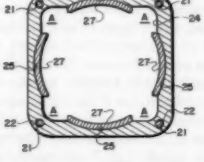
PERMANENT MAGNET DC MOTOR WITH MAGNETS RECESSED INTO MOTOR FRAME

Robert E. Lordo, Fort Mill, S.C., assignor to Powertron Division of Contraves Goerz Corp., Charlotte, N.C.

Filed Sep. 1, 1982, Ser. No. 413,935

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **14 Claims**



1. A motor frame and stator assembly for a permanent magnet direct current machine characterized by accommodating a

larger and more powerful armature relative to the interior and exterior dimensions of the frame, said assembly comprising:

(a) a metal frame having a pre-determined length and continuous walls the inner surface of which define a through void within which to accommodate a rotatably mounted armature;

(b) a plurality of arcuate, recessed seats formed into the inner walls of the frame in spaced-apart intervals around and extending along at least a part of the length of the frame, the walls of said frame along the extent of said seats being of reduced cross-sectional thickness and having a smooth, arcuate, even taper from a relatively thick wall at opposite edges of each seat to a relatively thin wall at the apex of each seat equidistant from the opposite edges thereof for compressing the armature flux within the tapered walls behind each seat to achieve magnetic saturation therein; and,

(c) a plurality of permanent magnets, each magnet having a convex side for being matingly adhered against one of said plurality of seats, and an opposite, concave side facing into the void.

4,453,098

COUPLING UNIT FOR CONNECTION OF HIGH-VOLTAGE GENERATOR WINDING LEAD-OUT AND CABLE

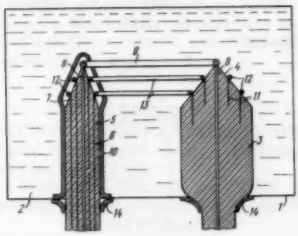
Pavel Z. Nikitin, Moscow; Yanush B. Danilevich, Leningrad; Konstantin N. Maslennikov, Novosibirsk; Pavel S. Kabanov, Moscow; Veniamin S. Turutin, Moscow; Jury F. Telezhnikov, Moscow; Konstantin F. Potekhin, Novosibirsk; Lev A. Zolotov, Moscow; Gennady A. Bezchastnov, Moscow; Tibor M. Nemeni, Moscow, and Alexandr I. Nikolsky, Moscow, all of U.S.S.R., assignors to Vsesojuzny Proektno-Izyskatelsky I. Nauchno-Issledovatelsky Institut "Gidroproekt" Imeni S.Ya. Yhuka, Moscow, U.S.S.R.

PCT No. PCT/SU80/00205, 371 Date Jul. 20, 1982, 102(e) Date Jul. 20, 1982, PCT Pub. No. WO82/02124, PCT Pub. Date Jun. 24, 1982

PCT Filed Dec. 18, 1980, Ser. No. 403,637

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—71 **1 Claim**



1. A coupling unit for connection of a generator high-voltage winding and a cable, comprising a casing filled with an insulation substance and accommodating a cable termination with a capacitor splice and a lead-out of a generator high-voltage winding, featuring sheaths and a capacitor splice, whose current carrying elements are joined together, the lead-out of the generator high-voltage winding being encased into an insulating hermetically sealed coating, characterized in that the sheaths **(6)** of the generator high-voltage winding lead-out **(5)** are made as an array of concentric cylinders which form, at the edge of the lead-out, a capacitor splice **(7)**, contact rings **(12)** being arranged on the surface of the capacitor splice **(7)** of the generator high-voltage winding lead-out **(5)** at a certain, distance from one another, each such ring **(12)** being connected to its sheath **(6)** of the generator high-voltage winding lead-out **(5)** which has a specific electrical potential, whereas the plates **(11)** of the capacitor splice **(4)** of the cable termination **(3)** are connected to their contact rings **(12)** arranged on the surface of the capacitor splice **(4)** of the cable termination **(3)**, each contact ring **(12)** located on the capacitor splice **(7)** of the generator high-voltage winding lead-out **(5)** in the plane parallel to the plane extending through the beginning of said capacitor splice **(7)** and at a specific uniform distance between said planes being joined by a strap **(13)** to the contact ring **(12)** located on the capacitor splice **(4)** of the cable termination **(3)** in the plane parallel to the plane extending through the beginning of the capacitor splice **(4)** of the cable termination **(3)** and at the same specific distance between latter planes, whereas the current carrying elements **(8)** of the generator high-voltage winding lead-out **(5)** and the cable termination **(3)** are linked by a power jumper.

4,453,099

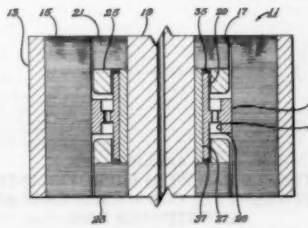
SUBMERSIBLE MOTOR BEARING WITH EXTENDED SLEEVE

Bill D. Flat, Owasso, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 22, 1982, Ser. No. 341,959

Int. Cl.³ H02K *5/16*; F04D *13/08*

U.S. Cl. 310—87 **3 Claims**



1. In a submersible pump motor having a shaft with spaced-apart rotor sections rotated within a stator, and an annular bearing having an inner portion between adjacent rotor sections, both ends separated from the rotor sections by washers, and a periphery that engages the stator, the improvement comprising:

sleeve means mounted to the shaft for rotation therewith and received rotatably within an inner portion of the bearings, the sleeve means having edges on its opposite ends that contact adjacent rotor sections for supporting the weight of rotor sections above the sleeve, the length of the bearing inner portion, including said washers, being less than the length of the sleeve to prevent the weight of rotor sections above the bearing from being transmitted to the bearing.

4,453,100

FLAT COIL ELEMENT FOR AN ELECTRIC MOTOR AND METHOD OF MANUFACTURING THE SAME

Yoshikuni Nozawa, Suwa, Japan, assignor to Entac Co., Ltd., Suwa, Japan

Filed Dec. 2, 1981, Ser. No. 326,513

Claims priority, application Japan, Dec. 5, 1980, 55-171582; Apr. 24, 1981, 56-62208; May 25, 1981, 56-78996

Int. Cl.³ H02K *3/04*

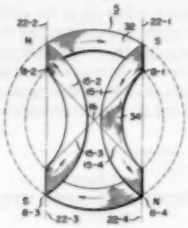
U.S. Cl. 310—203 **15 Claims**

1. A flat coil element for an electric motor of at least two poles, comprising:

at least one first conductive coil segment in the form of an arcuate flat band part having two substantially linear first ends of substantially equal length, wherein said first ends define first bending lines; and

at least one second conductive coil segment in the form of an arcuate flat band part and having two substantially linear

second ends of substantially equal length, wherein said second ends define second bending lines each coincident with a different one of said first bending lines of said first conductive coil segment, said second segment has overlapping parts in close contact with opposed parts of said



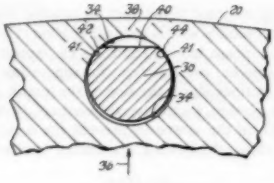
first coil segment, said second conductive coil segment being electrically connected to said first conductive coil segment at the coincident first and second bending lines to define a closed loop folded band together with said first conductive coil segment.

4,453,101

AMORTISSEUR BAR WITH IMPROVED INTERFACE BETWEEN FREE CONDUCTOR BARS AND AMORTISSEUR RING

Donald A. Nelson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 27, 1983, Ser. No. 536,417
Int. Cl.³ H02K *3/06*
U.S. Cl. 310—211 **5 Claims**



1. A rotor for a dynamoelectric machine comprising:

a plurality of pole pieces in said rotor;

each of said pole pieces including a plurality of amortisseur conductor bars adjacent the radially exterior surface thereof and affixed thereto and extending therebeyond;

first and second segments of an amortisseur ring electrically joining together all ends of said conductor bars at respective ends of said pole piece;

at least one of said conductor bars being a free conductor bar having an end disposed within a loosely fitting hole in said first segment and free to displace along an axis of said conductor bar within said loosely fitting hole; and

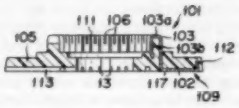
an end adjacent portion at said free conductor bar at which an outwardly depending portion thereof is removed to prevent the exact radially outer portions of ends of said bars from contact in a stress-bearing relation upon the portion of said ring exactly outward of said bars.

4,453,102

COMMUTATOR FOR FLAT MOTOR

Mitsuo Sawabe, Narita, and Kouichi Imai, Kawasaki, both of Japan, assignors to Nihon Radiator Co., Ltd. and Toho Tekko Co., Ltd., both of Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,501
Claims priority, application Japan, Apr. 14, 1981, 56-55134
Int. Cl.³ H02K *13/04*
U.S. Cl. 310—237 **9 Claims**



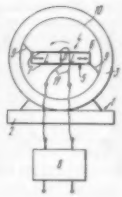
1. Commutator for a flat motor which includes fan-shaped brush contact pieces and connection pieces upraised from said brush contact pieces and kept electrically integral therewith wherein a plurality of segments made of conductive material are arranged in an annular form in a specified spaced apart relation in such a way as said connection pieces are positioned at an inner edge, said segments are insulated with each other by an insulator material, top ends of said connection pieces are bent to an inverted-U shape, their leading ends are buried in said insulator material, connection wires of an armature winding are pushed into slits made at the top ends of said connection pieces so as to connect the segments with the armature winding.

4,453,103

PIEZOELECTRIC MOTOR

Valdimir S. Vishnevsky; Igor A. Kartashev; Vyacheslav V. Lavrinenko; Oleg L. Boichenko; Vitaly S. Koval; Jury V. Golovyashin; Nikolai F. Serov; Leonid I. Shinkarenko, and Oleg G. Jurash, all of Kiev, U.S.S.R., assignors to Kievsky Politekhnichesky Institut, Kiev, U.S.S.R.

Filed Apr. 16, 1982, Ser. No. 369,180
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—323 **43 Claims**



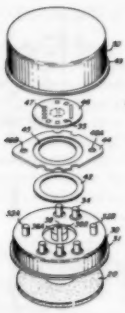
1. A piezoelectric motor comprising a stator and a rotor, one of said stator and rotor including at least one piezoelectric oscillator; said stator and rotor contacting each other along at least one frictional interaction surface; said piezoelectric oscillator having a piezoelectric element made from a piezoelectric material, and electrodes disposed on the opposite surfaces of said piezoelectric element; a supply source connected to said electrodes for exciting resonant mode of longitudinal vibrations in said piezoelectric oscillator; at least two pushers each having one end secured on said piezoelectric oscillator and the other end forced to said frictional interaction surface; said piezoelectric element being polarized in the direction perpendicular to the surfaces of said electrodes and being positioned so that the propagation direction of said resonant mode of longitudinal vibrations is perpendicular to said frictional interaction surface.

4,453,104

LOW-PROFILE CRYSTAL PACKAGE WITH AN IMPROVED CRYSTAL-MOUNTING ARRANGEMENT

Gary M. Rapps, Sunrise, and Alvin Feder, Lauderhill, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1982, Ser. No. 377,289
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—348 **9 Claims**



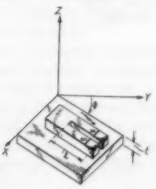
1. A low-profile crystal package assembly comprising in combination:
- a crystal plate having a plurality of conductive electrode patterns on each surface thereof;
- a base member which consists of a plurality of keyed locating pins and terminal connecting pins, and a mounting post;
- a support member, sufficiently large to receive an associated crystal plate within a centrally located cavity and keyed for positioning around the locating pins and terminal connecting pins;
- a plurality of wire bonds connecting the various terminal connecting pins to the appropriate electrode patterns of the crystal plate; and
- a ring of conductive meltable material intended to provide temporary support of said support member and crystal plate during wire bonding operations to said crystal plate, and which has been melted and allowed to wick into the interior of said base member to provide a semi-seal therebetween and said mounting post.

4,453,105

MODE COUPLED QUARTZ CRYSTAL TUNING FORK

Shigeru Kogure, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,420
Claims priority, application Japan, Sep. 8, 1980, 55-124266
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 **9 Claims**



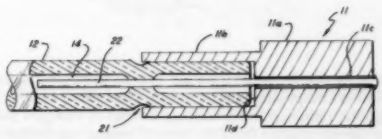
1. A quartz crystal tuning fork resonator having a first resonant frequency of vibration which changes with changes in ambient temperature, the relationship between said first resonant frequency and said temperature being approximated mathematically by a Taylor's expansion having at least a first order term with a coefficient α, a second order term with a coefficient β, a third order term with a coefficient γ, and a fourth order term with a coefficient δ, said resonator being produced from quartz crystal having an electrical X-axis, a mechanical Y-axis and an optical Z-axis, said resonator having at least a second resonant frequency of vibration, said first and second resonant frequencies of vibration being close in frequency and coupled, said crystal being cut at a selected thickness coupling said frequencies and making said first coefficient α approximately equal to zero, said crystal resonator being cut at a selected angle causing said second coefficient β to approximately equal zero, the arms of said tuning fork vibrator having a selected width to length ratio causing said third coefficient γ to approximately equal zero, the resultant frequency-temperature relationship having a fourth power characteristic and said changes in resonant frequency with said changes in ambient temperature are minimized over an extended working range of said vibrator.

4,453,106

COMPRESSION BASE LAMP

Carlo La Fiandra, New Canaan, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 24, 1980, Ser. No. 171,681
Int. Cl.³ H01J *5/50*
U.S. Cl. 313—331 **13 Claims**



1. A lamp comprising;
- a tubular quartz envelope,
- a metal base having a tubular extension normally having an inside diameter smaller than the diameter of said tubular quartz envelope,
- said tubular extension having a thermal coefficient of expansion to permit one end of said quartz envelope to be inserted therein when said tubular extension is at predetermined temperature and to secure said one end in a compression fit when said tubular extension cools from said predetermined temperature,
- said tubular extension extrudes to cold form to said one end of said quartz envelope when said tubular extension cools to normal ambient temperature from said predetermined temperature.

4,453,107

LONG LIFE TUNGSTEN HALOGEN LAMP WITH HYDROGEN BROMIDE AND METHYL BROMIDE

James P. Keenan, Reading, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 22, 1982, Ser. No. 341,941
Int. Cl.³ H01K *1/50*
U.S. Cl. 313—579 **7 Claims**

1. A sealed incandescent lamp containing a tungsten filament and a fill gas, said fill gas comprising hydrogen bromide and methyl bromide in a volume ratio of about 2.5 to 1, and argon.

4. A sealed incandescent lamp containing a tungsten filament

and a fill gas; said fill gas comprising hydrogen bromide and methyl bromide in a volume ratio of about 1.5 to 1, and krypton.

4,453,108

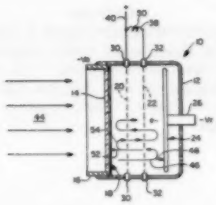
DEVICE FOR GENERATING RF ENERGY FROM ELECTROMAGNETIC RADIATION OF ANOTHER FORM SUCH AS LIGHT

John W. Freeman, Jr., Houston, Tex., assignor to William Marsh Rice University, Houston, Tex.

Continuation-in-part of Ser. No. 208,942, Nov. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 90,889, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,117, May 11, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,427

Int. Cl.³ H01J *25/02*

U.S. Cl. 315—5.18 **42 Claims**



1. A device for generating RF energy from electromagnetic radiation comprising emitter means responsive to the electromagnetic radiation for producing a beam of charged particles, an electrode spaced from the emitter means, the emitter means and the electrode defining a path therebetween along which the charged particles move, the path having a predetermined path length and the emitter means having a dimension transverse to the path that is greater than the path length such that the beam of charged particles has a transverse dimension greater than the path length, and a resonant structure for supporting RF oscillations, the resonant structure being located with respect to the path so as to define a plurality of RF field regions along the path and so as to enable continuous energy transfer in each region from the charged particles to an RF field associated with the RF oscillations, the resonant structure comprising a pair of grids spaced along said path and with both grids having a positive bias relative to said emitter means and said electrode.

4,453,109

MAGNETIC TRANSFORMER SWITCH AND COMBINATION THEREOF WITH A DISCHARGE LAMP

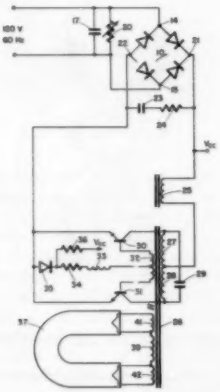
Edward H. Stupp, Spring Valley; Mark W. Fellows, Monroe; Walter G. Steneck, Ossining, all of N.Y., and Vincent J. Spataro, Bergenfield, N.J., assignors to North American Philips Corporation, New York, N.Y.

Filed May 27, 1982, Ser. No. 382,511

Int. Cl.³ H05B *41/29*

U.S. Cl. 315—219 **11 Claims**

1. A leakage reactance transformer comprising at least two pot cores joined together at their major openings to form a substantially closed hollow cylinder with primary and secondary cylindrically shaped sections extending through the middle of said cylinder, one from each of its ends; the open ends of said sections defining a space therebetween; a disc with two faces disposed in said space, one of said faces being attached to said secondary section with the center of said disc concentric with the center of said secondary section; said disc forming a first air gap between its open face and the open end of said primary section; said disc forming a substantially cylindrical second air gap between its outside edge and the round inside wall of said hollow cylinder; primary winding means wound on said primary section which when connected to a prescribed current cource produces a primary flux; secondary winding means wound on said secondary section which when connected to a particular load produces a secondary flux which bucks said primary flux; and additional winding means wound on said secondary section which when connected in a closed circuit carries a current whose magnitude varies inversely with that of the current in said secondary winding means.



4. In combination with the leakage reactance transformer of any of claims **1**, **2** or **3**, a fluorescent lamp with heater elements, said heater elements being connected to said additional winding means and an oscillator inverter circuit connected to said primary winding means and which, when connected to a power source, provides current to said primary winding means.

4,453,110

STROBO FLASH APPARATUS

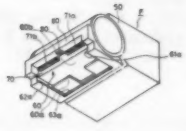
Akira Iwamoto; Reiji Hirata, both of Osaka, and Hikoya Yako, Takatsuki, all of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

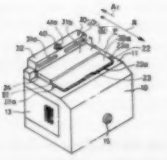
Filed Feb. 10, 1983, Ser. No. 465,455

Claims priority, application Japan, Feb. 18, 1982, 57-25442

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **3 Claims**





1. A strobo flash apparatus having a power source part including a DC-DC converter circuit for inducing a D.C. high voltage and a flashing part including a flashing means,

wherein said power source part formed separately from said flashing part comprising:

a connecting plate member disposed on an upper face of a housing of said power source part and to form a grooves at least both at and under its right and left side edges thereof for a connection with said flashing part,

sockets having contacts for supplying said D.C. high voltage and

a stopper means having a stopper pin projected outside by an elasticity,

and said flashing part comprising:

a connecting recess formed on a housing of said flashing part correspondingly to said connecting plate,

a protrusion formed on said housing of said flashing part for engaging with said grooves of said connecting plate,

an indent formed on said housing of said flashing part for engaging with said stopper pin of said stopper means and

contact pins projected outside from said housing of said flashing part for a connection with said socket.

4,453,111

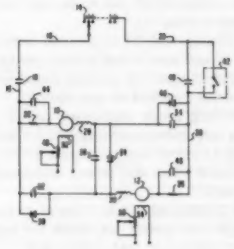
ELECTRIC DRIVE FOR SUBMARINES

Frank E. Acker, Forest Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1982, Ser. No. 367,142

Int. Cl.³ H02P *1/52*

U.S. Cl. 318—111 **7 Claims**



1. An electric motor marine propulsion system which is energized by a direct current power source, said propulsion system comprising:

a positive conductor connected to one terminal of said direct current power source;

a negative conductor connected to a second terminal of said direct current power source;

a branch circuit connected between said positive and negative conductors;

said branch circuit comprising the series connection of a first shunt wound direct current electric motor, a first diode and a second shunt wound direct current electric motor, wherein said first diode is connected between said first and second electric motors;

a first pair of contacts connected between the cathode of said first diode and said positive conductor for shorting said cathode to said positive conductor;

a second pair of contacts connected between the anode of said first diode and said negative conductor for shorting said anode to said negative conductor;

a chopper for regulating current flow in said positive and negative conductors;

a second diode connected across said first pair of contacts and being reverse biased;

a third diode connected across said second pair of contacts and being reverse biased;

a first starting resistor connected in series with said first motor;

a second starting resistor connected in series with said second motor;

means for shorting said first resistor; and

means for shorting said second resistor.

4,453,112

ELECTRONIC SAFETY DEVICE FOR CONTROLLING THE DRIVE MOTOR ATTACHED TO A SLIDING WINDOW

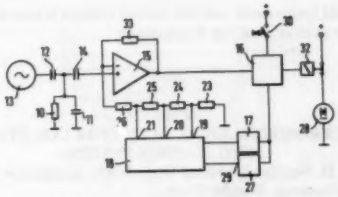
Gerd Sauer, Stolberg-Venwegen, and Dieter Unbehaun, Nuremberg, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Mar. 25, 1982, Ser. No. 362,040

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111684

Int. Cl.³ G05D *3/00*

U.S. Cl. 318—281 **13 Claims**



1. An electrically operated sliding window equipped with a safety device which prevents the window from moving whenever a portion of a human body approaches the window, said safety device comprising:

a capacitive pickup oriented along an upper edge of said window,

an oscillator producing an output signal which is applied to said pickup and is responsive to the approach of said body portion, and

a detector, having an input sensitivity and responsive to a signal appearing across said pickup, for ascertaining the approach of said body portion to said window as a function of whether the rate-of-change of said signal exceeds a pre-selected threshold value during a finite interval of time during which the input sensitivity is successively increased throughout a plurality of pre-defined values so as to minimize any spurious effects and erratic operation of the window.

4,453,113

REGENERATIVE BRAKE CONTROL FOR TRANSIT VEHICLE

Paul J. Merlino, West Newton, Pa., and Kevin J. Reilly, San Ramon, Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 9, 1983, Ser. No. 473,514

Int. Cl.³ H02P *3/14*

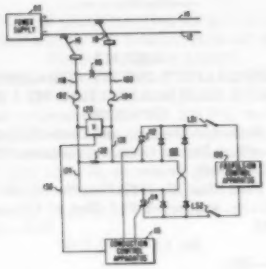
U.S. Cl. 318—376 **10 Claims**

1. In regenerative braking control apparatus for a moving vehicle having a propulsion motor operative in a brake mode and coupled with power supply lines providing first and second polarity conditions, the combination of:

means for sensing a first voltage of said power lines and after a predetermined time period sensing a second voltage of said power lines,

means for determining that said first polarity condition exists and that the second voltage is one of equal to or greater than the first voltage, and

means for connecting the propulsion motor to said power lines when said first polarity condition is provided during



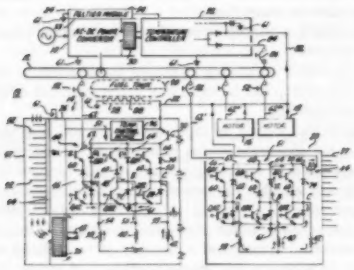
said brake mode and the second voltage is one of equal to or greater than the first voltage.

4,453,114

ELECTROMECHANICAL ACTUATOR COUNTER-EMF UTILIZATION SYSTEM

Lester H. Nordlund, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1982, Ser. No. 454,587
Int. Cl.³ H02P 3/14
U.S. Cl. 318—376 **16 Claims**



10. A regenerative system for utilizing the counter-EMF energy produced by an electromechanical actuator acting as a generator during deceleration of the actuator for cooling the actuator, the actuator having a magnetic field associated with either the rotor or stator of the actuator and a plurality of electromagnetic windings associated with the other of the rotor or stator and connectable to an actuator input power supply system, said regenerative system comprising:

commutator circuit means operably coupled between said electromagnetic windings and the power supply system for energizing said electromagnetic windings to operate the actuator as a motor, and terminating such energization of the electromagnetic windings to permit deceleration of the actuator whereby it operates as a generator;

cooling means disposed in heat flow communication with the actuator; and

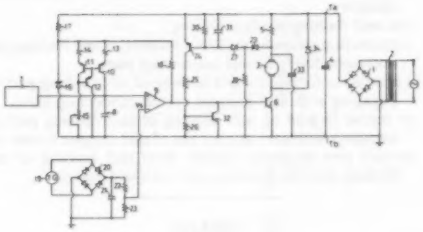
rectifier circuit means distinct from said commutator circuit means for diverting from said commutator circuit means the counter-EMF energy generated by the actuator during deceleration and simultaneously transmitting the counter-EMF electrical energy to said cooling means to power said cooling means.

4,453,115

DC MOTOR CONTROL SYSTEM

Noriyuki Yoshida, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 12, 1982, Ser. No. 397,577
Claims priority, application Japan, Jul. 21, 1981, 56-114022
Int. Cl.³ H02H 9/02
U.S. Cl. 318—434 **2 Claims**



1. A motor control system for controlling the drive current to be supplied to a motor from a direct current source through a power transistor, comprising

a circuit for connecting said power transistor in series circuit with said motor, between positive and negative terminals of said source, said power transistor being connected between a terminal of said motor and said negative terminal of said source;

a current sensing resistor connected between said positive terminal of said source and another terminal of said motor, for generating a current sensing signal proportional to the drive current supplied to said motor;

a free wheeling diode connected across a series circuit, including said current sensing resistor and said motor, for providing a current discharge path for the induced current of said motor when said power transistor is in a non-conductive state;

a capacitor connected across a series circuit including said motor and said power transistor for supplementing the said drive current to said motor; and

a current limiting circuit for rendering said power transistor non-conductive when the magnitude of said current sensing signal exceeds a predetermined value.

4,453,116

SCALAR DECOUPLED CONTROL FOR AN INDUCTION MACHINE USING CURRENT CONTROL

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,216
Int. Cl.³ H02P 7/42
U.S. Cl. 318—727 **7 Claims**

1. An induction machine drive for achieving fast transient response, said drive being coupled to an induction machine and comprising:

a voltage fed current controlled inverter providing variable frequency a.c. power to the induction machine;

torque sensing means coupled to said machine for generating a signal indicative of actual machine torque;

first comparison means coupled to said torque sensing means for comparing a commanded torque signal to said signal indicative of actual machine torque to generate a commanded torque error;

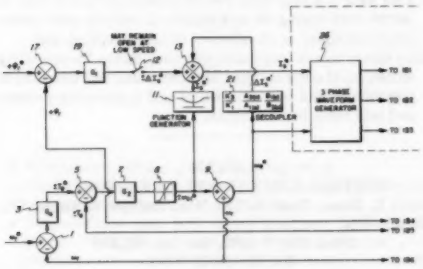
slip command generating means for generating a slip command from the commanded torque error;

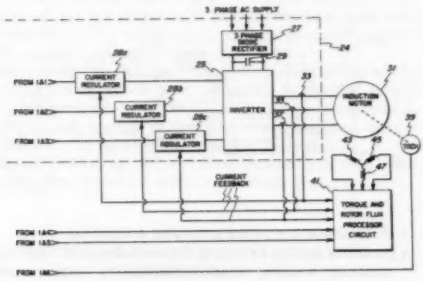
a first function generator coupled to said slip generating means and being responsive to commanded slip for providing a stator current magnitude command to maintain rotor flux constant during steady state condition at a predetermined value dependent on a predetermined rela-

tionship between slip and stator current, said stator current magnitude command providing a torque producing component for said machine;

signal generating means responsive to rotor speed of said machine for generating a signal indicative of actual rotor speed;

first summation means coupling said slip command generating means and signal generating means to said inverter, said first summation means adding said slip command to said actual rotor speed to generate a stator frequency command for said inverter;





a second function generator coupled to said summation means and being responsive to changes in commanded stator frequency for generating a decoupling signal; and

second summation means adding said first and second function generator signals and coupling the resultant signal to said inverter, said second function generator signal compensating said stator current command signal from said first function generator to maintain rotor flux constant at said predetermined value during transient conditions due to changes in the commanded machine stator frequency.

4,453,117

MOTOR CONTROL APPARATUS WITH SHORT TERM UNDERVOLTAGE MOTOR MODE SAVER

Robert T. Elms, 735 Heartwood Dr., Monroeville, Pa. 15146; Pamela M. Maynard, 509 Coal St., Wilkinsburg, Pa. 15221, and Denis A. Mueller, 83 Ballantree Dr., Asheville, N.C. 28803

Filed Apr. 14, 1983, Ser. No. 485,090
Int. Cl.³ H02H *3/08, 3/24*
U.S. Cl. 318—778 **3 Claims**

1. A motor controller, comprising:

contactor means interconnected with the power supply lines of an electric motor for opening said power supply lines upon the presence of a command signal thus stopping said motor;

first voltage sensing means interconnected with said power supply lines for providing a voltage-related output signal for said power supply lines;

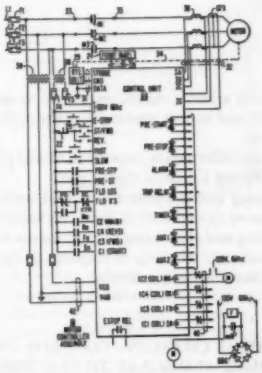
second voltage sensing means interconnected with said power supply lines for providing a time-related output signal indicative of the time which has expired since a voltage value on said power supply lines has droppped below a predetermined level;

current sensing means interconnected with said power supply lines for providing a current-related output signal for said power supply lines;

control means interconnected with said contactor means for supplying said command signal, said control means, comprising:

microprocessor means for performing control and calculation functions for said control means;

first memory means interconnected with said power supply lines for being empowered thereby and interconnected with said microprocessor means for providing stored data thereto; and



reset means interconnected with said microprocessor means and said first voltage sensing means for initializing said microprocessor when said voltage value drops below said predetermined value and for causing said command signal to be subsequently sent to said contactor means, upon initialization said microprocessor means testing said memory means for determining if the stored data therein is reliable, if said data is determined to be reliable said microprocessor means interacting with said current sensing means for determining if current is flowing in said power supply lines, if said current is determined not to be flowing, said microprocessor interacting with said second voltage sensing means to determine if the time which has expired is greater than a predetermined time value, if said time is not greater than said predetermined time value, said microprocessor operating to automatically restart said motor.

4,453,118

STARTING CONTROL CIRCUIT FOR A MULTISPEED A.C. MOTOR

Graham R. Phillips, St. Louis, and Marvin J. Fisher, Ballwin, both of Mo., assignors to Century Electric, Inc., St. Louis, Mo.

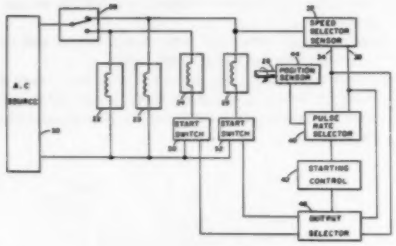
Filed Nov. 8, 1982, Ser. No. 440,156
Int. Cl.³ H02P *1/44*
U.S. Cl. 318—779 **23 Claims**

1. A starting control circuit for connecting a multispeed alternating current motor having at least two run windings and at least two start windings and a mechanical rotational output to an alternating current source comprising;

speed selector means for connecting one of said run windings and start windings to said alternating current source;

speed selector sensing means connected to said speed selector means for sensing the connection determined by said speed selector means and for producing a speed selection signal indicative thereof;

sensor means coupled to the mechanical rotational output for directly sensing a predetermined amount of rotational movement of the mechanical rotational output and for producing a sensor signal indicative thereof;



pulse rate selector means responsive to said speed selection signal and to said sensor signal for producing a pulse rate signal;

start controller means responsive to said pulse rate signal for producing a control signal; and

energizing means connected to said start windings and responsive to said control signal for connecting and disconnecting said alternating current source to said selected one of said start windings in response to the control signal of said start controller means.

4,453,119

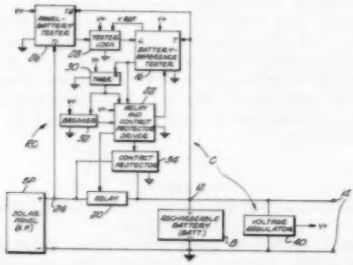
ELECTRICAL CHARGING CONTROL APPARATUS AND METHOD, AND SOLAR TO ELECTRICAL ENERGY CONVERSION APPARATUS INCORPORATING SUCH CHARGING CONTROL APPARATUS

Terry Staler, 18643 Collins St., Apt. 26, Tarzana, Calif. 91356, and John W. Yerkes, 16562 Knollwood Dr., Granada Hills, Calif. 91344

Continuation of Ser. No. 113,936, Jan. 21, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,336

Int. Cl.³ H02J *7/09*

U.S. Cl. 320—39 **32 Claims**



1. Apparatus for controlling the charging of a rechargeable electrical energy storage device for generating a storage device electrical signal, by a variable output electrical energy source for generating a source electrical signal, said source having a charging output terminal and said device having a charging input terminal, said source electrical signal being dependent upon the electrical device or devices that are electrically coupled to said charging output terminal, said apparatus comprising:

relay means for electrically coupling the charging output terminal of the source and the charging input terminal of the device to permit said charging;

signal-testing means coupled to said relay means for receiving the storage device electrical signal and the source electrical signal to test said signals and provide an electrical output signal for permitting and preventing said coupling in response to said signals;

relay breaker means coupled to said relay means for providing an electrical breaker signal for breaking said coupling after said coupling for a predetermined period of time to permit said testing of said signals to include said source electrical signal in the absence of said coupling; and

relay driver means coupled to said relay means for providing an electrical control signal for controlling said coupling in response to said output signal of said signal-testing means and said relay breaker signal.

4,453,120

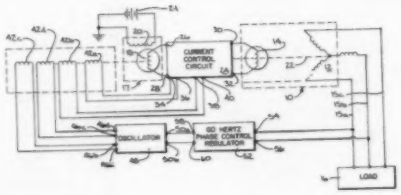
CONTROL CIRCUIT FOR A GENERATOR

Michael E. Bauer, Fond du Lac, Wis., assignor to Kohler Co., Kohler, Wis.

Filed May 9, 1983, Ser. No. 492,893

Int. Cl.³ H02P *9/30*

U.S. Cl. 322—28 **8 Claims**



1. A feedback controlled generator comprising:

a generator having a rotating field winding and a stationary armature winding which generates an output voltage proportional to the magnitude of current in said field winding;

an exciter having an armature winding which rotates co-jointly with the generator field winding for producing an exciter voltage;

a current control circuit mounted to rotate co-jointly with the generator field winding and exciter armature winding for regulating the amount of current supplied to said generator field winding from said exciter armature winding in accordance with control pulses supplied to said control circuit;

a phase control regulator responsive to the output voltage generated in said generator armature and producing an output signal whose phase varies in accordance with the generator output voltage;

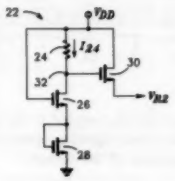
an oscillator coupled to said phase control regulator for generating control pulses in accordance with the duty cycle of the input signal supplied thereto from said phase control regulator; and

a coupling transformer having a pair of stationary windings coupled to said oscillator and having a pair of secondary windings attached to rotate with said current control circuit and said secondary windings being electrically coupled to said current control circuit so as to couple the pulses induced in said primary winding by said oscillator to said current control circuit so that said current control circuit regulates current supplied to said generator field winding from said exciter armature winding in accordance with the magnitude of the generator output voltage.

4,453,121
REFERENCE VOLTAGE GENERATOR

Glenn E. Noufer, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1981, Ser. No. 332,645
Int. Cl.³ G05F 3/20
U.S. Cl. 323—226 1 Claim

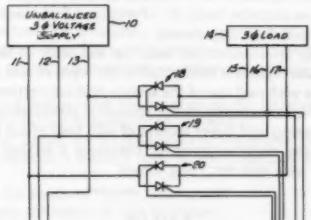


1. A reference voltage generator comprising:
a resistor having a first terminal coupled to a first power supply terminal and a second terminal;
a first insulated gate field effect transistor having a first current electrode coupled to the second terminal of the resistor, a control electrode directly connected to the first power supply terminal, and a second current electrode;
a second insulated gate field effect transistor having a first current electrode and a control electrode coupled to the second current electrode of the first insulated gate field effect transistor, and a second current electrode coupled to a second power supply terminal; and
a third insulated gate field effect transistor having a first current electrode directly connected to the first power supply terminal, a control electrode directly connected to the second terminal of the resistor; and a second current electrode for providing a reference voltage;
wherein the first, second, and third insulated gate field effect transistors are of the same conductivity type.

4,453,122
ELECTRICAL BALANCING CONTROL FOR THREE-PHASE LOADS

Ewing A. Johnson, 99 Sterling Rd., and Paul E. Straight, 1222 Greenbriar Rd., both of Fairmont, W. Va. 26554

Filed Oct. 19, 1981, Ser. No. 312,665
Int. Cl.³ G05F 5/00
U.S. Cl. 323—300 5 Claims

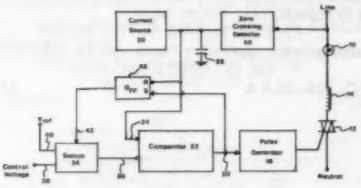


1. A balancing control for supplying a balanced three-phase alternating current supply to an electrical load, comprising three controllable semiconductor gate means respectively feeding one phase of a three-phase alternating current supply to an electrical load, said semiconductor gate means adapted to controllably adjust an electrical characteristic of a phase of said supply in accordance with a gate control signal to be applied thereto, comparator circuit means also connected to receive said three-phase alternating current supply and adapted to compare a like electrical characteristic of each phase to determine an unbalanced condition therebetween, computer means connected to said comparator circuit means and adapted to supply gate control signals to said gate means respectively to independently control said gate means in accordance with the unbalanced condition to adjust the like electrical characteristics of the three phases of said supply to a balanced condition.

4,453,123
SYSTEM FOR PROVIDING A FIRING SIGNAL TO AN ELECTRICAL POWER SWITCH

Ronald E. Erkman, 1906 Gold Ave. SE., Albuquerque, N. Mex. 87106

Continuation of Ser. No. 197,642, Oct. 16, 1980, abandoned.
This application Oct. 27, 1981, Ser. No. 315,305
Int. Cl.³ G05F 5/00
U.S. Cl. 323—324 3 Claims



1. A system for providing a firing signal to an electrical power switch at a selectable instant during each cycle of a periodic waveform electric power source, comprising:
a voltage source providing a voltage varying monotonically with time;
control means providing a selectively variable voltage; and
comparator means coupled with the voltage source to receive the monotonically varying voltage and with the control means to receive the selectively variable voltage, for providing the firing signal at such time that one of the monotonically varying voltage and the selectively variable voltage first exceeds the other;
the control means comprising means for clamping the selectively variable voltage to a predetermined value for producing a predetermined minimum power output from the electrical power switch.

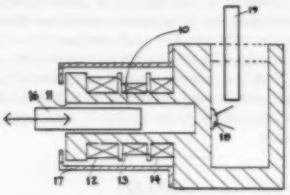
4,453,124
LINEAR INDUCTIVE TRANSDUCERS

John H. Francis, Cirencester; John P. Vernon, Chipping Sodbury, and John H. Moore, Kingscote, all of England, assignors to Lucas Industries plc, Birmingham, England

Filed Jul. 6, 1982, Ser. No. 395,675
Claims priority, application United Kingdom, Jul. 10, 1981, 8121311
Int. Cl.³ H02P 13/10
U.S. Cl. 323—347 7 Claims

1. A temperature compensated inductive transducer system comprising a winding having a plurality of coils and a core member slidable within the winding to vary the inductance thereof, the dimensions of said coils and the number of turns thereof being arranged so that the inductance of the winding changes substantially linearly over the desired range of movement of the core member, circuit means for applying a step voltage across a resistance network including said winding, said circuit means including a transistor having its collector emitter path connected in circuit with a source of electric supply and said resistance network, further means for monitoring the change in current in a part of said resistance network as

a result of the application of said step voltage and for providing an output signal when the current reaches a predetermined



value, and a temperature responsive resistor forming part of said resistance network, said temperature responsive resistor being mounted in close proximity to the winding.

4,453,125

MICROWAVE ALCOHOL FUEL SENSOR

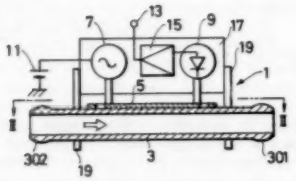
Katsuhiro Kimura, Tokyo; Akira Endo, Mito; Takanori Shibata, Hitachi, and Hiroshi Morozumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,899

Claims priority, application Japan, Jul. 15, 1981, 56-109369

Int. Cl.³ G01R *27/04, 27/26*

U.S. Cl. 324—58.5 A **16 Claims**



1. A microwave alcohol fuel sensor for measuring the alcohol content of an alcohol-gasoline fuel mixture, which comprises:

a microwave oscillator which generates microwaves and is connected to an electric power source;

a microwave receiver; and

a microwave transmission means for transmitting microwaves from said microwave oscillator to said microwave receiver, said microwave transmission means including a dielectric portion contacting the alcohol-gasoline fuel mixture, whereby microwaves are leaked into the alcohol-gasoline fuel mixture and the microwaves which reach said microwave receiver vary according to the content of alcohol in said alcohol-gasoline fuel mixture.

4,453,126

MEASUREMENT OF ANAESTHETIC GAS CONCENTRATION

George A. Volgyesi, Toronto, Canada, assignor to The Hospital for Sick Children, Toronto, Canada

Filed Mar. 26, 1979, Ser. No. 24,283

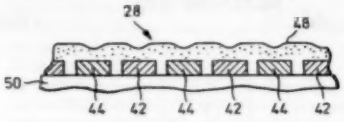
Claims priority, application Canada, Aug. 2, 1978, 308592

Int. Cl.³ G01R *27/26;* **G01N** *27/22*

U.S. Cl. 324—61 R **2 Claims**

1. A transducer for providing an output signal proportional to the concentration of anaesthetic gas in a breathing mixture, the transducer comprising:

a sensor intended to be exposed to a breathing mixture containing anaesthetic gas, the sensor forming an electrical capacitor and comprising first and second electrical conductors positioned in proximity to one another and defining a space therebetween, and a substantially non-conductive material filling said space and forming a dielectric of said capacitor, the material being one of a lipid and an elastomer and having a molecular structure which permits the absorption of the anaesthetic gas and a dielectric constant which changes in proportion to changes in the concentration of said anaesthetic gas; and,



electrical circuit means coupled to the sensor and adapted to provide said output signal proportional to said variations in the capacitance of the sensor.

4,453,127

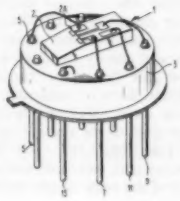
DETERMINATION OF TRUE ELECTRICAL CHANNEL LENGTH OF SURFACE FET

Jerome D. Schick, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1982, Ser. No. 386,495

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71.3 **7 Claims**



1. A method for determining the electrical channel length of a surface field effect transistor, comprising the steps of:

bevel sectioning said field effect transistor for exposing enlarged source and drain regions,

connecting either one of the source or drain regions to the input of an electron-beam-induced-current detecting means with the other of the source or drain regions, and the substrate connected to a reference potential,

line scanning the bevel section of said field effect transistor with an electron beam for obtaining a first scanning trace with said detecting means,

changing the connections such that the other of said source or drain regions is connected to the input of said detecting means with said one of the source or drain regions, and the substrate connected to the reference potential, and

line scanning said bevel section of said field effect transistor with the electron beam for obtaining a second scanning trace with said detecting means.

4,453,128

DIGITAL DISPLAY TESTING CIRCUIT

John H. Steinmetz, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 30, 1981, Ser. No. 258,870

Int. Cl.³ G01R *31/024*

U.S. Cl. 324—403 **19 Claims**

1. A self-testing display circuit comprising:

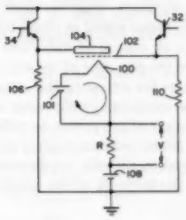
(a) a plurality of digit displays each of said displays comprising a plurality of anode segments and a grid for controlling the flow of current to said anode segments;

(b) means for selectively enabling groups of said segments,

said groups consisting of corresponding segments in each of said displays;

(c) a cathode common to all of said displays;

(d) means operatively associated with said grids and said segment enabling means for selectively energizing or



de-energizing a particular segment without affecting any other segment; and,

(e) detecting means operatively associated with said cathode for detecting the change in the cathode current due to energizing or de-energizing said particular segment.

4,453,129

METHOD FOR MEASURING THE CHARGE STATE OF AN ACCUMULATOR AND A DEVICE FOR IMPLEMENTING SUCH METHOD

Francois-Claude Lissalde, Seyssins, and Jacques Esteve, Annecy, both of France, assignors to Cristec Industries, Annecy, France

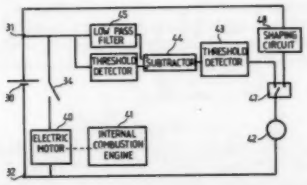
PCT No. PCT/FR81/00004, 371 Date Sep. 4, 1981, 102(e) Date Sep. 4, 1981, PCT Pub. No. WO81/02066, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 12, 1981, Ser. No. 300,127

Claims priority, application France, Jan. 14, 1980, 80 00951

Int. Cl.³ G01N *27/46*

U.S. Cl. 324—429 **10 Claims**



1. A method for measuring the charge state of an electric storage battery intended to be connected to an electric starting motor for an internal combustion engine, comprising the steps of:

measuring and storing the voltage at the terminals of the battery before connection to the motor;

detecting during each connection of the motor the temporary maximum voltage drop at the terminals of the battery;

storing the result of the detection; and

displaying the result of this detection.

4,453,130

SWITCHED-CAPACITOR STAGE WITH DIFFERENTIAL OUTPUT

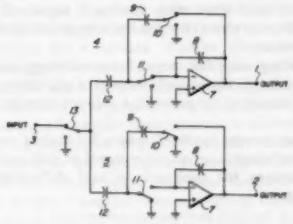
Jeffrey H. Bennett, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 25, 1982, Ser. No. 411,414

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—51 **6 Claims**

1. A switched-capacitor stage having a single-ended input and a differential output, the stage comprising a first through-switched capacitor coupled between said input and a first differential output terminal, and a second diagonally-switched



capacitor coupled between said input and a second differential output terminal.

4,453,131

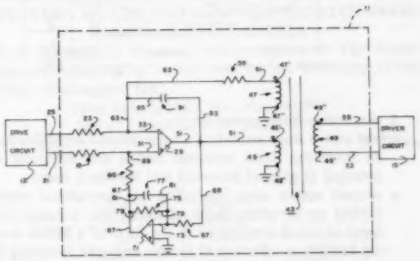
TRANSFORMER COUPLED AMPLIFIER CIRCUIT

Jeffrey O. Paullus, Memphis, Tenn., assignor to Auditronics, Inc., Memphis, Tenn.

Filed Sep. 30, 1982, Ser. No. 429,793

Int. Cl.³ H03F *1/32*

U.S. Cl. 330—97 **4 Claims**



1. A transformer coupled amplifier circuit for transforming electrical energy from a drive circuit to a driven circuit without any transformer induced non-linearities, said drive circuit having a positive input voltage signal and/or a negative input voltage signal, said circuit comprising:

(a) input conditioning means for receiving and conditioning said input voltage signals from said drive circuit and for providing a positive conditioned output signal and/or a negative conditioned output signal, said input conditioning means including a first resistor for receiving said positive input voltage signal of said drive circuit and a second resistor for receiving said negative input voltage signal;

(b) differential amplifier means for receiving and amplifying the difference between said conditioned output signals of said input conditioning means and for providing a single ended output signal having, in part, a direct current voltage, said differential amplifier means including an amplifier having a positive input for receiving said positive conditioned output signal from said input conditioning means, having a negative input for receiving said negative conditioned output signal from said input conditioning means, and having a single output;

(c) current booster means for boosting the single ended output signal of said differential amplifier means;

(d) output transformer means for receiving and isolating said single ended output from said current booster means and for providing an alternating current feedback signal said output transformer means including a transformer having a first primary winding for receiving said single ended

output signal from said current booster means, having a second primary winding, and having a secondary winding for providing said driven circuit with electrical energy;

(e) alternating current feedback means for scaling and conditioning said alternating feedback signal of said output transformer means for feedback to said differential amplifier means;

(f) inverting amplifier means for monitoring said direct current voltage of said output signal of said differential amplifier means and for providing a direct current error signal; and

(g) direct current feedback means for scaling and conditioning said direct current error signal of said inverting amplifier means for feedback to said differential amplifier means.

4,453,132

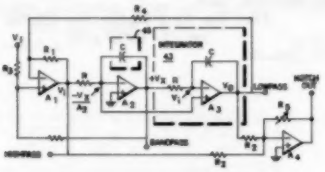
ACTIVE FILTER

Michael M. Stamler, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 21, 1982, Ser. No. 370,442

Int. Cl.³ H03F *1/36*

U.S. Cl. 330—107 **5 Claims**



1. An active filter comprising:

a first active stage including an operational amplifier having an inverting input terminal and a non-inverting input terminal at ground potential and feedback means;

a second active stage including an operational amplifier having an inverting input terminal and a non-inverting input terminal configured in the form of a Miller integrator having an effective Q factor, and said inverting input terminal of said second active stage coupled to the output of said first active stage; and

said non-inverting terminal of the operational amplifier of the second active stage connected to said inverting input terminal of said operational amplifier of said first active stage whereby said effective Q factor of said Miller integration is increased for enhancing the filter characteristics.

4,453,133

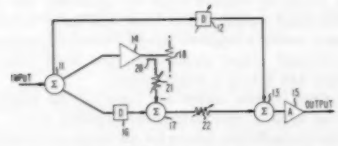
ACTIVE PREDISTORTER FOR LINEARITY COMPENSATION

George W. Travis, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1982, Ser. No. 365,313

Int. Cl.³ H03F *1/26*

U.S. Cl. 330—149 **7 Claims**



1. An amplifier circuit for an electromagnetic wave signal comprising a power amplifier and an auxiliary amplifier wherein the distortion introduced by the power amplifier is compensated by using the auxiliary amplifier characterized in that

the auxiliary amplifier is connected to receive a portion of the electromagnetic wave signal and is a voltage amplifier having similar input-output, delay, and phase characteristics to the power amplifier, means for combining the output of the auxiliary amplifier and a portion of the electromagnetic wave signal in phase opposition relationship to produce an output of distortion components substantially free of the presence of the electromagnetic wave signal, and means for adjusting the electrical path length traversed by the electromagnetic wave signal before being applied to the input of the power amplifier, and means for combining the distortion components and the electromagnetic wave signal to provide predistortion compensation for improving the linearity of the amplifier circuit.

4,453,134

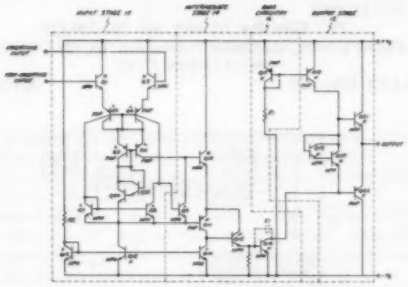
HIGH VOLTAGE OPERATIONAL AMPLIFIER

Joseph Pernyeszi, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 295,433, Aug. 24, 1981, abandoned. This application Jul. 20, 1982, Ser. No. 400,199

Int. Cl.³ H03F *3/45, 3/26*

U.S. Cl. 330—255 **4 Claims**



1. A high voltage integrated circuit operational amplifier comprising:

an input circuit having an inverting input and a noninverting input for a high voltage input signal; and an output circuit coupled

to said input circuit and having an output for said amplifier; said input circuit including

a first pair of transistors having a high voltage characteristic of one conductivity type for providing an impedance transformation from a high impedance to a low impedance, each coupled to a different one of said inputs and to the positive terminal of a power supply,

a second pair of transistors having a low voltage characteristic of opposite conductivity type for biasing the input stage for providing amplification of the input signal, each coupled to a different one of said first pair of transistors and to each other, and

a third pair of transistors having a low voltage characteristic of said one conductivity type for providing gain, each coupled to a different one of said second pair of transistors, to each other and to a current source, such that a double-to-single-ended conversion is accomplished.

4,453,135
AMPLIFIER CIRCUIT ARRANGEMENT HAVING TWO AMPLIFIERS WITH RESPECTIVELY DIFFERENT ELECTRICAL PROPERTIES

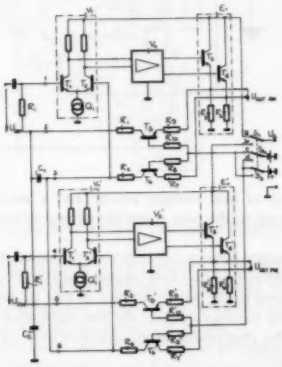
Johann Mattfeld, Eschenrain 5, D-7101 Untergruppenbach, and Hans-Jürgen Maute, Helfenberger Strasse 3, D-7101 Abstatt, both of Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,244

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1981, 3127889

Int. Cl.³ H03F *3/68*

U.S. Cl. 330—295 **9 Claims**



1. A circuit arrangement comprising at least first and second multi-stage amplifiers, means for ensuring that only one of said amplifiers is in operation at any time, said amplifiers having different electrical properties and having feed-back paths for stabilizing DC voltage, and isolation capacitor means, said feed-back paths being separated from each other with respect to DC current by said isolation capacitor means, wherein at least one feed-back path of said first amplifier is connected to a feed-back path of said second amplifier, and a common capacitor is provided, said feed-back paths being connected to a reference potential by said common capacitor, means also being provided for permitting current flow only through that one of said feed-back paths which belongs to the amplifier in operation.

4,453,136
AFC SYSTEM FOR CONTROLLING AN OSCILLATOR ACCORDING TO AN INPUT FREQUENCY

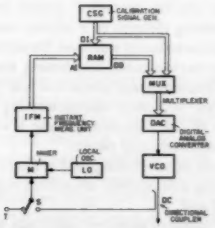
Martin J. Kelland, Horsham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,675

Claims priority, application United Kingdom, Oct. 22, 1980, 8034065; Feb. 13, 1981, 8104628

Int. Cl.³ H03L *7/06*

U.S. Cl. 331—1 A **15 Claims**



1. A method of operating an automatic frequency control system comprising frequency measuring means and controllable-frequency signal generating means, the frequency measuring means being operable to produce a frequency quantity related to the frequency of its input signal by a first transfer characteristic and the frequency of the output signal generated by the signal generating means being related to a control signal supplied thereto by a second transfer characteristic, the method including, in an operating mode, deriving from a first source an input signal for the frequency measuring means, producing therewith a respective frequency quantity, using a predetermined third transfer characteristic to derive a control signal from the respective frequency quantity, and supplying that control signal to the signal generating means to control the frequency of the output signal generated thereby, characterized in that the third transfer characteristic is variably predeterminable and in that the determination thereof, in a separate calibration mode, comprises the steps of supplying a control signal, derived from a second source, to the signal generating means, deriving from the resultant output signal of the signal generating means, an input signal for the frequency measuring means, which in turn produces a resultant frequency quantity, and storing as an associated pair of resultant frequency quantity along with the control signal derived from the second source, the relationship between the resultant frequency quantity and its control signal being representative of a combination of the first and second transfer characteristics.

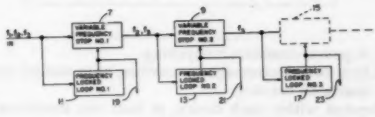
4,453,137
SIGNAL PROCESSOR FOR PLURAL FREQUENCY DETECTION AND TRACKING OVER PREDETERMINED RANGE OF FREQUENCIES

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 5, 1982, Ser. No. 345,993

Int. Cl.³ H03H *11/04*; H03L *7/06*

U.S. Cl. 331—2 **9 Claims**


VARIABLE FREQUENCY STOP NO.1
VARIABLE FREQUENCY STOP NO.2
FREQUENCY LOCKED LOOP NO.1
FREQUENCY LOCKED LOOP NO.2
FREQUENCY LOCKED LOOP NO.3

7. A signal processor circuit capable of locking onto and tracking a plurality of frequencies simultaneously, comprising: a plurality of similar cascaded stages, each stage being capable of locking onto and tracking one of said plurality of frequencies and passing on all of the remaining non-locked frequencies to the succeeding stage, each said stage including a frequency locked loop circuit for tracking said one stage frequency and each stage except the last including a variable frequency stop circuit for eliminating said one stage frequency from said plurality of frequencies.

4,453,138
BROADBAND INJECTION LOCKED OSCILLATOR SYSTEM

Richard Scheer, Jackson Heights, N.Y., assignor to ITT Corporation, New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,211

Int. Cl.³ H03L *7/20*

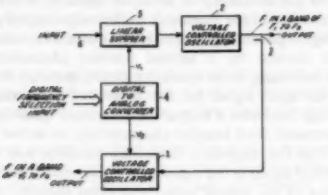
U.S. Cl. 331—47 **23 Claims**

1. A broadband injection locked oscillator system comprising:

a first voltage controlled oscillator having a signal output for a first signal controlled by a first voltage to have a first frequency in a first relatively broad frequency range; and

a second voltage controlled oscillator having a signal output for a second signal controlled by a second voltage differ-

ent than said first voltage to have a second frequency in a second relatively broad frequency range, said output of said second oscillator being coupled to a signal input of



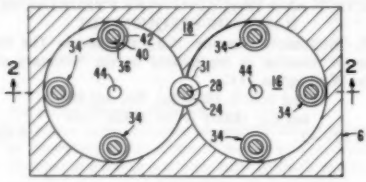
said first oscillator to injection lock said first oscillator to said second oscillator, said second frequency being harmonically related to said first frequency when said injection lock occurs.

4,453,139

FREQUENCY OFFSET MULTIPLE CAVITY POWER COMBINER

Frederik Labaar, Long Beach, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Nov. 12, 1981, Ser. No. 320,981
Int. Cl.³ H03B *7/14, 9/14*
U.S. Cl. 331—47 **11 Claims**



1. A power combiner comprising:

at least two electromagnetic cavities, with mutual coupling among all cavities;

disposed within each cavity, at least one electromagnetic power generating device; and

a central structure, having a bandwidth greater than any of the cavities, and coupled to each of the cavities without the interposition, between the central structure and any of the cavities, of an intervening means having a bandwidth narrower than that of any of the cavities or central structure, said central structure disposed to convey combined electromagnetic power away from the cavities;

wherein said cavities are tuned to at least two different resonant frequencies falling within the passband of the central structure;

whereby said combined electromagnetic power can be injection locked over a broader frequency band than for a corresponding combiner in which the cavities are tuned to the same frequency.

4,453,140

OSCILLATOR USING CHARGE-DISCHARGE CHARACTERISTICS OF A TRANSISTOR JUNCTION

Wayne L. Gindrup, 1019 12th St. Dr., SW., Hickory, N.C. 28601

Filed Nov. 18, 1981, Ser. No. 322,453
Int. Cl.³ H03K *3/282;* **H05B** *39/09*
U.S. Cl. 331—111 **4 Claims**

1. A transistor oscillator circuit comprising

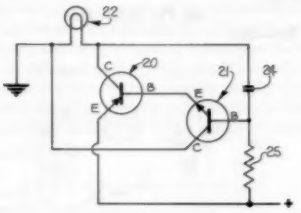
(a) a voltage source having first and grounded terminals;

(b) a load having one terminal grounded;

(c) a first transistor of a first semiconductor type having a collector, emitter and base, said collector electrode being connected to the ungrounded load terminal, said emitter electrode being connected to the first terminal of said voltage source;

(d) a second transistor of the opposite semiconductor type having a collector, emitter and base, said collector electrode being grounded, and said emitter electrode being connected to the base electrode of said first transistor;

(e) a resistor having one terminal connected to the first



terminal of said voltage source and a second terminal connected to the base electrode of said second transistor; and

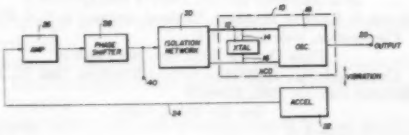
(f) a capacitor having one terminal connected to the collector electrode of said first transistor and a second terminal connected to the base electrode of said second transistor, whereby the duty cycle of the load depends at least in part upon the charge-discharge characteristics of a transistor junction.

4,453,141

SUPPRESSION OF VIBRATION EFFECTS ON PIEZOELECTRIC CRYSTAL RESONATORS

Vincent J. Rosati, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,644
Int. Cl.³ H03B *5/32, 5/04*
U.S. Cl. 331—158 **14 Claims**



1. A method of suppressing the effects of vibration acting on a piezoelectric crystal resonator which comprises the frequency determining element of a crystal controlled oscillator whereby vibration-induced sideband frequencies are produced in a vibrational environment, comprising the steps of:

sensing the frequency and amplitude and phase of vibration of the crystal resonator and generating an electrical analog signal of the vibration having a corresponding frequency, amplitude and phase;

amplifying and phase shifting said analog signal to provide a signal having a selectively adjustable amplitude and opposite phase; and

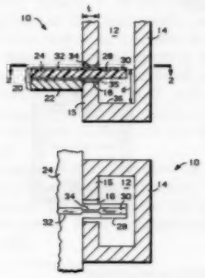
applying the signal of selective amplitude and opposite phase directly to the electrodes of the crystal resonator to suppress the sideband frequencies.

4,453,142

MICROSTRIP TO WAVEGUIDE TRANSITION

Earl R. Murphy, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 2, 1981, Ser. No. 317,661
Int. Cl.³ H01P 5/107
U.S. Cl. 333—26 8 Claims



1. A right angle microstrip to waveguide transition, comprising:

a waveguide defining a first direction of propagation;

an aperture through a transverse wall of said waveguide;

probe means disposed inside said waveguide for coupling to energy propagating in said waveguide;

a circuit defining a second direction of propagation substantially perpendicular to said first direction of propagation; and

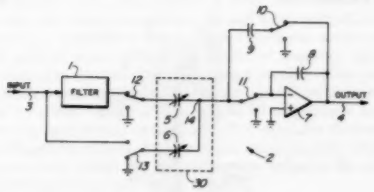
a microstrip transition section disposed in said aperture connected at one end thereof to said probe means and at another end thereof to said circuit, said microstrip transition section having a length at least as great as a thickness of said waveguide wall and a predetermined width, said length being an integral multiple of one-half of a microstrip wavelength.

4,453,143

SWITCHED-CAPACITOR VARIABLE EQUALIZER

Jeffrey H. Bennett, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 25, 1982, Ser. No. 411,413
Int. Cl.³ H03H 11/06
U.S. Cl. 333—28 R 7 Claims



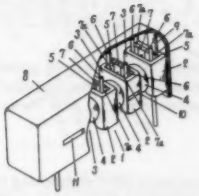
1. A variable equalizer comprising a filter, a summing amplifier, means for applying a signal to be equalized to an input of the filter, and means for deriving an equalized signal from an output of the summing amplifier, the summing amplifier comprising a switched-capacitor amplifier stage having a first variable capacitor coupled between an output of the filter and an input of the amplifier stage and having a second variable capacitor coupled between the input of the filter and an input of the amplifier stage, each of the first and second variable capacitors comprising a switched-capacitor.

4,453,144

LC COMPOSITE COMPONENT

Toshiaki Tamura, Neyagawa; Yoshiaki Otani, Hirakata; Hiroshi Otake, Katano, and Masami Yamamura, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00119, 371 Date Jan. 27, 1982, 102(e) Date Jan. 27, 1982, PCT Pub. No. WO81/03576, PCT Pub. Date Dec. 10, 1981
PCT Filed May 29, 1981, Ser. No. 355,550
Claims priority, application Japan, Jun. 4, 1980, 55-78469[U]
Int. Cl.³ H03H 1/00
U.S. Cl. 333—140 3 Claims



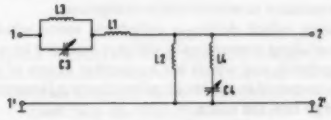
1. An LC composite component comprising: a coaxial bobbin, a plurality of collars thereon defining winding grooves therebetween, coils wound in the winding grooves, each collar having a concave recess therein, open at a top end thereof, terminal pins projecting upwardly from the opposite ends of the concave recess, a leadless tip type capacitor having upwardly projecting electrodes accommodated in the concave recess and the coils and the capacitor electrodes being connected with each other by said terminal pins, said capacitor electrodes being connected to said terminal pin at said open end of the concave recess of said each collar.

4,453,145

BAND PASS FILTER

Harald Schuster, Neu-Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 421,108
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213436
Int. Cl.³ H03H 7/09, 7/075
U.S. Cl. 333—174 11 Claims

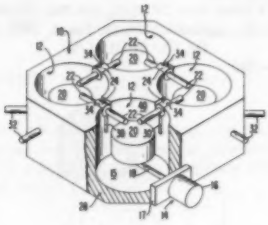


1. A band-pass filter comprising series elements and shunt elements, said series elements comprising a parallel resonant circuit and a first inductance means, said shunt elements comprising a series resonant circuit and a second inductance means, and said resonant circuits comprising variable capacitance means, whereby the frequency may be varied over a frequency band.

4,453,146
DUAL-MODE DIELECTRIC LOADED CAVITY FILTER WITH NONADJACENT MODE COUPLINGS

Slawomir J. Fiedziuszko, Palo Alto, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 27, 1982, Ser. No. 425,015
Int. Cl.³ H01P 1/208, 7/10, 7/06
U.S. Cl. 333—212 7 Claims



1. An electromagnetic filter comprising two cavities defined by electrically conductive walls, said cavities having substantially the same dimensions and sharing a common wall;

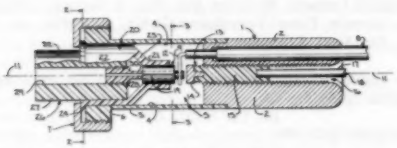
wherein two orthogonal modes of electromagnetic energy resonate within each cavity; and

a pair of electrically adjacent modes and a pair of electrically nonadjacent modes are coupled by means of an intercavity coupler comprising an elongated iris opening between the two cavities and an elongated electrically conductive probe extending into each of the cavities.

4,453,147
MODULAR LUMPED CIRCUIT RESONATOR

Wojciech Froncisz, Cracow, Poland, and James S. Hyde, Dousman, Wis., assignors to Medical College of Wisconsin, Inc., Milwaukee, Wis.

Filed Mar. 25, 1982, Ser. No. 361,594
Int. Cl.³ H01P 7/00; G01N 27/00
U.S. Cl. 333—219 13 Claims



1. A resonator structure which comprises:

a housing which defines a cylindrical space which is disposed along a central axis, which is bounded by a conductive shield, and which has an opening at one of its ends;

means mounted to the housing for injecting electromagnetic energy into the space;

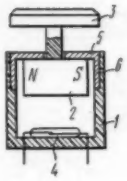
a resonator module which includes a loop-gap resonator fastened to a resonator support, the resonator module being disposed in said opening at said one end of said housing with its resonator support engaging the housing to position the loop-gap resonator inside the cylindrical space along the central axis; and

means for fastening the resonator support to the housing to retain the loop-gap resonator in position along said central axis.

4,453,148
KEY SWITCH

Georgy G. Norakidze, ulitsa Lenina, 75, kv. 16; Ramaz M. Sakandelidze, ulitsa Lenina, 20, kv. 4; Eduard K. Sitnikov, Digomsky massiv, III kvartal, 35, kv. 45, and Otar K. Khomeriki, ulitsa Pavlova, 2, kv. 13, all of Tbilisi, U.S.S.R.

Filed Feb. 24, 1983, Ser. No. 469,264
Int. Cl.³ H01H 9/00
U.S. Cl. 335—205 4 Claims



1. A key switch comprising:

a housing;

a permanent magnet accommodated in said housing;

a key rigidly connected with said permanent magnet for reciprocation therewith relative to said housing;

a switching member secured in said housing to be acted upon by said permanent magnet as said key is displaced;

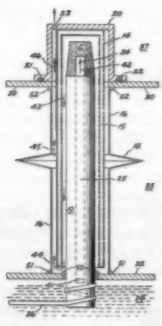
a plate of a ferromagnetic material defining a means for retaining said key in its initial position, secured in said housing intermediate said key and said permanent magnet;

at least one plate of a ferromagnetic material, arranged in said housing in the direction of reciprocation of said key, with a gap relative to said permanent magnet, defining a magnetic circuit with said plate of said key-retaining means and defining a means for returning said key into the initial position thereof, the length of said at least one plate of said key-returning means in the direction of reciprocation of said key being short of the sum total of the value of the maximum displacement of said key and the extent of said permanent magnet in this direction.

4,453,149
EXCITATION LEAD FOR SUPERCONDUCTING DEVICES, PARTICULARLY MAGNETS

Pedro A. Rios, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1983, Ser. No. 481,190
Int. Cl.³ H01F 7/22
U.S. Cl. 335—216 7 Claims



1. An excitation lead system in combination with a superconducting coil disposed within a cryostat having at least an internal wall and an external wall, comprising:

an electrical conductor extending through said cryostat walls and electrically insulated therefrom and electrically connected within said cryostat to said superconducting coil, said conductor having disposed therein an internal, longitudinally extending channel for passage of coolant vapors from the internal volume of said cryostat;

a housing surrounding the portion of said conductor extending between said internal and said external cryostat walls;

a removable dewar having a re-entrant cavity defined therein and disposed so that said conductor extends into said cavity and disposed so as to define a coolant vapor path extending from the external opening of said conductor channel along the exterior length of said conductor toward said internal cryostat wall and thence again toward the external cryostat wall along a path between the outermost wall of said dewar and the internal wall of said housing; and

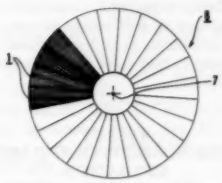
a removable external cap sealably covering an opening in said external cryostat wall through which electrical connection may be made with said conductor, said cap including a vent aperture in fluid communication with said coolant vapor path.

4,453,150

ELECTRIC SHUNT INDUCTION WINDING AND AUTOMATIC LAMINATION CUTTING MACHINE THEREFORE

Gerard Messe, Maule; Michel Faure, Houilles, and Marcel Ducombs, Rueil-Malmaison, all of France, assignors to Alsthom-Atlantique, Paris Cedex, France

Filed May 12, 1981, Ser. No. 262,878
Claims priority, application France, May 12, 1980, 80 10574
Int. Cl.³ H01F *27/24*
U.S. Cl. 336—234 **1 Claim**



1. An electric shunt induction winding for an electric power transport line, said winding having a magnetic core with an electric coil and a magnetic barrel winding round said coil to close the magnetic circuit, said magnetic core comprising a vertical stack of iron disks separated from one another by air gaps, each disk having a central hole and being constituted by juxtaposing a plurality of sector-shaped portions, each sector-shaped portion comprising a succession of magnetic laminations situated in vertical planes which are parallel to the axis of the electric winding, each said sector-shaped portion being formed by a first bundle of laminations all of identical length and by a second bundle of laminations of regularly decreasing lengths from one sheet to the next, the improvement wherein the direction in which the laminations are rolled in the mill is perpendicular to the axis of the winding.

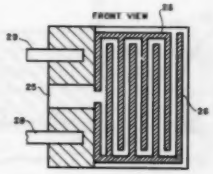
4,453,151

SEMICONDUCTOR GAS SENSOR

David J. Leary, 2832 Eagle Dr., Fort Collins, Colo. 80526, and James O. Barnes, 3100 Rockwood Dr., Fort Collins, Colo. 80525

Filed Jun. 7, 1982, Ser. No. 385,822
Int. Cl.³ G01N *27/12, 27/04, 27/16*
U.S. Cl. 338—34 **7 Claims**

1. A semiconductor sensor for specific gases comprising a multiple layered structure including an insulating substrate having a discrete semiconductor layer deposited thereon formed by spraying a liquid suspension of a mixture comprising a preselected solid metal/oxide semiconductor capable of sensing a specific gas and a porosity enhancing and defining



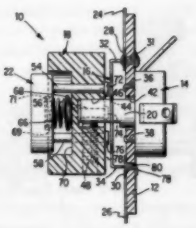
agent capable of defining pore sizes in said layer of a predetermined size which is selected to permit a predetermined specific gas to come into contact with the semiconductor within said layer.

4,453,152

SEWING MACHINE CONTROL

Allan M. Dob, Clifton; Richard Mead, Whippany, and Terry L. Wilson, Denville, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jan. 10, 1983, Ser. No. 456,875
Int. Cl.³ H01C *10/00*
U.S. Cl. 338—197 **2 Claims**



1. A control for a sewing machine including a printed circuit board, a movable contact member between conductive paths on the board biased into a position wherein the paths are disconnected at said member, a potentiometer mounted on the board, an input shaft for the ptentiometer, an outer control knob on the shaft for turning the shaft to modulate operation of the potentiometer, an inner control knob within the outer knob including means extending through the outer knob to engage and move said movable contact member so as to connect the said conductive paths on the board, and a spring and a snap disc within the outer knob responsive to inward movement of the inner knob for providing tactile feel to the inner knob.

4,453,153

BLEEDER RESISTOR FOR ANTENNA ISOLATOR

Raymond G. Capek, Elmhurst, and Elgie Garrett, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

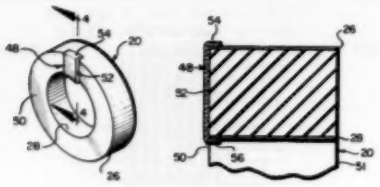
Filed May 10, 1982, Ser. No. 376,460
Int. Cl.³ H01C *1/012*
U.S. Cl. 338—309 **3 Claims**

1. A combined dielectric element and bleeder resistor for an isolator, comprising:

an annular dielectric element having an inner circumference, an outer circumference, and a pair of end faces;

a first conductive coating on the dielectric element's inner circumference and a second conductive coating on the dielectric element's outer circumference; and

a resistor composition formed on the dielectric element such that a narrow strip of resistor composition overlies one of the end faces and extends at both its ends in a direction



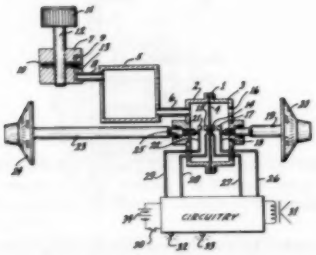
perpendicular to the one end face so as to contact the conductive coatings on the dielectric element's inner and outer circumferences.

4,453,154

ALTITUDE MONITOR

Joseph M. Rait, Buffalo, and David Dhanens, Cheektowaga, both of N.Y., assignors to Tech Nomadic Corporation, Del.

Filed Aug. 14, 1981, Ser. No. 293,404
Int. Cl.³ G08B *23/00, 21/00*; G01L *7/12*
U.S. Cl. 340—970 **7 Claims**



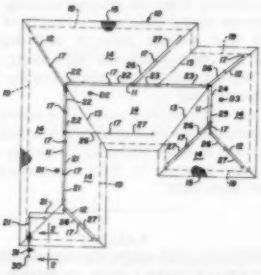
1. A self contained barometric instrument manually settable, in situ, in accordance with any prevailing ambient reference pressure to detect and signal a manually adjustable deviation from the ambient reference pressure; comprising a body, a single diaphragm dividing said body into first and second chambers completely sealed from each other, operator accessible and manually manipulatable valve means for selectively effecting when in open position and interrupting exposure when in closed position of said first chamber, in situ, to the ambient reference pressure, vent means for continuously exposing said second chamber to ambient pressure, a signal device for alerting an operator to a preselected deviation from the reference pressure, an electrical, battery operated, signal circuit for energizing said signal device, electrical switch contacts for making and breaking said signal circuit responsive to deflection of said diaphragm caused by differential pressure thereacross, a first screw type axially movable shaft operatively engaging said contacts for adjusting the sensitivity of said contacts to the deflection of said diaphragm, a first knob on said first shaft for facilitating manual actuation, indicia positioned at said first knob for calibrating the pressure deviation to which the contacts respond, whereby a change in ambient pressure effects displacement of said diaphragm when said valve means is in closed position to thereby energize said signal circuit activating said signal device.

4,453,155

FIRE PROTECTION FOR WOOD SHINGLE ROOF

Gary D. Cooper, Arlington, Tex., assignor to Raincloud Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 172,664, Jul. 28, 1980, which is a continuation-in-part of Ser. No. 132,867, Mar. 24, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 334,076
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—289 **24 Claims**



1. In a fire protection system for a building roof, said system including: water dispensing means mounted on said building and disposed for wetting the exterior roof surface; supply means for feeding water from a water supply source to said dispensing means; and motorized valve means connecting said supply means to said supply source; the improvement comprising:

a sensor circuit comprising a loop of an electric current conductor disposed on said exterior roof surface and a signal device connected in an electrically energized circuit; said signal device being triggered in response to a selected open or closed condition of said sensor circuit; and said signal device being connected to said motorized valve means to effect the opening of said valve in response to the triggering of said signal device

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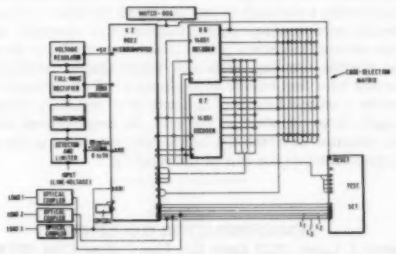
4,453,156

LOAD CONTROL RECEIVER AND METHOD OF OPERATION

Richard W. Brown, Mound, and Gary Winkler, Minneapolis, both of Minn., assignors to Brown, Boveri & Co. AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,669
Int. Cl.³ H04B *3/54*; G08C *19/00*
U.S. Cl. 340—310 R **24 Claims**



15. In a system for detecting the presence or absence of an audio-frequency signal (V_T) superimposed on a power supply network, the audio-frequency signal (V_T) having a known frequency (f_T) and an amplitude (A_T) lying within a permissible range of amplitudes (ΔA_T), where the power supply network transmits a signal mixture (V) containing a fundamental

(V_g, f_g, A_g), harmonics (V_H, f_H, A_H) thereof and interference frequencies (V_S, f_S, A_S), the improvement therein comprising a microcomputer having means operatively associated therewith for generating a signal at the same point on adjacent waves of the fundamental (V_g);

an analog/digital converter (ADC) for taking, at equal time intervals (Δt), after the occurrence of a first generated signal (ZCS 1), a given number (N) of samples (SO) of the voltage (V) on the power supply network, a read-write memory (RAM) connected to said converter (ADC) for storing digital amplitude widths (S0.1, S0.2, . . . S0.N) of the samples (S0) in said converter (ADC), said memory (RAM), after occurrence of a further generated signal (ZCS_2), being actuatable for taking a further equal number (N) of samples (S1);

means for forming a digital difference (D) of the two samples (S0, S1);

said memory (RAM) being actuatable for likewise storing the digital difference values (D1, . . . DN);

means for checking a first criterion as to whether the digital difference values (D1, . . . DN) are within a range of difference values (ΔD) which corresponds to the permissible range of amplitudes (ΔA_T) of the audio-frequency signal (V_T);

means for determining minimum values (D_{min}) of the digital difference values (D1 . . . DN);

means for determining a spacing difference (ΔN) between two successive minima (D_{min});

means for checking a second criterion as to whether the spacing difference (ΔN) corresponds to the spacing of two successive points of the audio-frequency signal (V_T) at which the generated signal is generated; and

means for generating a "present" signal (ES) in said microcomputer when both said criteria are met.

4,453,157

BI-PHASE SPACE CODE DATA SIGNAL REPRODUCING CIRCUIT

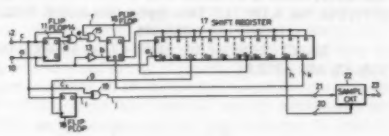
Kenji Kaneko, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 21, 1982, Ser. No. 341,369

Claims priority, application Japan, Jan. 26, 1981, 56-9922

Int. Cl.³ G11B *5/09*

U.S. Cl. 340—347 DD **4 Claims**



1. A bi-phase space code data signal reproducing circuit comprising:

clock pulse supplying means for supplying a clock pulse having a period which is 1/N (N is an integer) of a bit period T of a bi-phase space code data signal to be reproduced;

a shift register supplied with said clock pulse, for performing a shifting operation;

a main flip-flop supplied with said data signal and an output signal obtained from an intermediate part of said shift register, for holding a sampling value of said data signal at a point which is substantially T/4 from the beginning of each data of said data signal;

an exclusive-OR circuit supplied with an output signal of said main flip-flop and said data signal; and

a reproduced data obtaining circuit for sampling an output signal of said exclusive-OR circuit by a sampling clock at a point which is substantially 3T/4 from the beginning of each data of said data signal obtained from said shift register, to obtain a reproduced data.

4,453,158

METHOD FOR ENCODING ANALOG SIGNALS

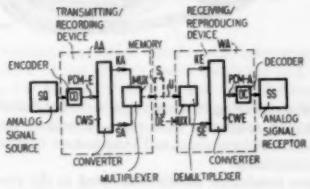
Bjoern Bluethgen, Celle, Fed. Rep. of Germany, assignor to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 343,811

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107602

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 AD **5 Claims**



1. In a method for encoding analog signals for transfer thereof in digital form for reducing the digital signal flow comprising the steps of;

sampling momentary values of said analog signal;

converting the sampled momentary values of said analog signal into a series of pulse code modulated code words;

forming a corresponding series of pulse code modulated differential code words from pairs of successive pulse code modulated code words in said series, each pulse code modulated differential code word together with at least one auxiliary code element forming a reference code word having a predetermined constant length which is selected to be less than a maximum possible length of a pulse code modulated differential code word;

constantly comparing the respective lengths of the combination of said pulse code modulated differential code word together with said auxiliary code element with the length of said reference code word; and

abbreviating a pulse code modulated differential code word compared with said reference code word when the length of said combination exceeds the length of said reference code word by generating a companded differential pulse code modulated word by eliminating a selected number of the least significant code elements of the excess-length pulse code modulated differential code word, or by forming a pulse code modulated double word consisting of two words respectively comprising the least significant and most significant code elements of the excess-length pulse code modulated differential code word;

the improvement comprising the steps of:

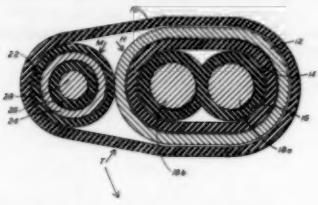
additionally replacing pulse code modulated differential code words by pulse code modulated words when the signal content of the pulse code modulated differential code words including the auxiliary code elements does not exceed said reference code word; and

flagging the type of code words occurring in the reduced digital signal flow with a control bit sequence in which a single bit allocation per word is employed, said control bit sequence being generated in the train of said reduced digital signal flow by a logic means simultaneously with the code words replacing said excess-length code words, said control bit sequence controlling the succession of types of code words as well as decoding of said code words after transfer thereof.

4,453,159
SELF-MONITORING HEAT TRACING SYSTEM

Greg Huff, San Marcos, and John Gardner, Seguin, both of Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Filed Sep. 28, 1981, Ser. No. 305,933
Int. Cl.³ G08B 17/02
U.S. Cl. 340—590 20 Claims



1. A self-monitoring heat tracing system for distributing heat from a power source to heat pipes, conduits, tanks or like objects which detects abnormal temperature conditions in the system, comprising:

(a) heater conductor means connected to the power source for heating the object to be heated;

(b) monitor conductor means, mounted in proximity to said heater conductor means, having a temperature-dependent electrical impedance; said monitor conductor means comprising:

a first conductor means formed of a fusible conductive material;

a second conductor means mounted in proximity to said first conductor means;

an insulator means formed of a porous material and mounted between said first conductor means and said second conductor means; and,

means for measuring the electrical impedance between said first conductor means and said second conductor means; wherein said first conductor defuses through said insulator means in response to abnormally high temperature conditions at points along said heater conductor thereby completing an electrical circuit between said first conductor and said second conductor;

(c) alarm means, connected to said monitor conductor for forming an alarm signal in response to variations in the electrical impedance of said monitor conductor means indicative of abnormal temperature conditions in the system.

4,453,160
MESSAGE CHARACTER IMAGE PROJECTION CONTROL MEANS

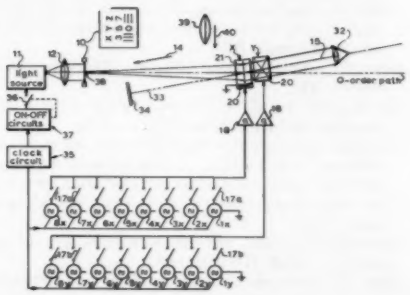
Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Sep. 28, 1983, Ser. No. 536,546
Int. Cl.³ G08B 5/36
U.S. Cl. 340—815.27 3 Claims

1. In an optical system including an array of message characters, a source of light and means for exposing message characters of said array to light from said source, and optical means positioned along an optical axis of said system for establishing individual optical path relationships between said array of message characters and said optical axis for allowing a viewing of predetermined ones of said characters by a human eyeball from along said optical axis, wherein the improvement comprises:

(a) said optical means including first and second acousto-optic optical path relationship control means and each said control means including an ultrasonic frequency transducer and an interaction medium positioned along said optical axis, and a source of ultrasonic frequency voltages and circuit means for connecting said transducers to this source of voltages for an establishing of any of a number of different acoustic wave light reflecting conditions within the interaction medium of said first control means and within the interaction medium of said second control means, each said optical path relationship corresponding, respectively, to a combination of said light reflecting conditions of said first and second control means;

(b) means for establishing a predetermined one of said light reflecting conditions within said medium of the first control means and a predetermined one of said light reflecting conditions within said medium of the second control



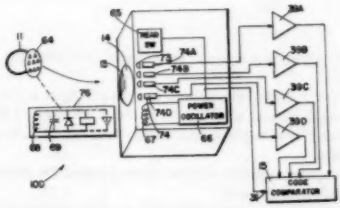
means and establishing a corresponding one of said optical path relationships between predetermined ones of the message characters of said array and said human eyeball from along said optical axis;

(c) said exposing of message characters of said array to light from said source including a flooding of the entire array of said message characters, simultaneously, with light from said source of light, said flooding of the entire array of message characters allowing said viewing of predetermined ones of said characters by said human eyeball from along said optical axis.

4,453,161
SWITCH ACTIVATING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 121,894, Feb. 15, 1980, Pat. No. 4,354,189, which is a continuation of Ser. No. 849,785, Nov. 9, 1977, Pat. No. 4,189,712. This application Jun. 4, 1982, Ser. No. 385,085
Int. Cl.³ H04Q 1/00; E05B 47/00; H04B 9/00
U.S. Cl. 340—825.31 8 Claims



1. An electrically operated lock system comprising in combination:

first means for opening and closing a switch,

second means for operating said first means to cause said first means to close said switch,

said second means including electrically controllable means and a short wave pick-up operatively connected to said electrically controllable means,

third means including a portable short wave code generating and transmitting means adapted to be carried by a person seeking to activate said circuit by closing said switch,

fourth means connected to said pick-up of said second means and operable for electrically detecting short wave codes generated by said third means, said fourth means being operable to activate said second means to control the operation of said first means,

said first, second and fourth means being supported on a common support,

said third means being automatically operable when carried to a given range of said fourth means to generate a short wave code receivable by said pick-up and detectable by said fourth means for causing said fourth means to generate a control signal for controlling said second means to close said switch whereby said switch may be employed to connect a source of electrical energy to an electrical circuit when so closed.

4,453,162

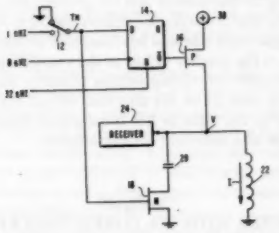
EFFICIENT AND FAST-SWITCHING TELEMETRY TRANSMITTER

David K. Money, Pennant Hills, and Christopher N. Daly, Bilgola Plateau, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed May 10, 1982, Ser. No. 376,276

Int. Cl.³ G08C *19/00*; A61N *1/00*

U.S. Cl. 340—870.39 **14 Claims**



1. A signalling system comprising a transmitter tuned circuit having a capacitor and an inductor therein, means for selectively enabling and disabling said tuned circuit to oscillate, means for pumping said tuned circuit when it is enabled at a frequency which is at least approximately equal to the resonant frequency of said tuned circuit, and means for controlling the disabling of said tuned circuit following a previous enablement when approximately all of the energy stored therein is in the form of voltage across said capacitor and for maintaining and then utilizing the voltage across said capacitor to initially energize the tuned circuit when it is next enabled.

4,453,163

HEADS UP DISPLAY

H. Douglas Garner, Newport News, and William E. Howell, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 28, 1982, Ser. No. 383,384

Int. Cl.³ G01C *21/00*, *25/00*

U.S. Cl. 340—980 **6 Claims**

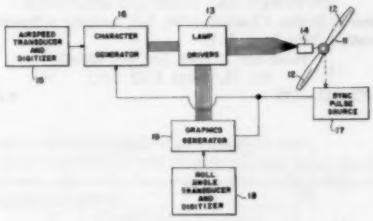
1. A display for a propeller driven aircraft in which the rear surface of a propeller is in view of the pilot of the aircraft comprising:

a row of lamps on the rear surface of said propeller that is in view of the pilot;

a plurality of lamp drivers in one-to-one correspondence with said lamps and with each lamp driver connected to control its corresponding lamp;

means on said aircraft for producing signals indicative of the criteria to be displayed;

means for producing a plurality of sync pulses during each revolution of said propeller while said aircraft is in flight, with each sync pulse produced at a different time; and



graphics generating means connected to receive said signals indicative of the criteria to be displayed and said sync pulses for activating through said lamp drivers selected ones of said lamps each time a sync pulse is received to provide a visual display of the criteria to the pilot.

4,453,164

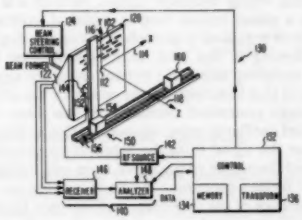
METHOD OF DETERMINING EXCITATION OF INDIVIDUAL ELEMENTS OF A PHASE ARRAY ANTENNA FROM NEAR-FIELD DATA

Willard T. Patton, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,514

Int. Cl.³ H01Q *3/00*

U.S. Cl. 343—360 **10 Claims**



1. A method comprising the steps of:

(a) selecting a set of at least first and second off-broadside beam directions for taking near-field data on a phased array antenna which is capable of steering its beam in multiple directions relative to the broadside direction of its array face;

(b) steering said antenna beam in said first direction and taking near-field amplitude and phase data at a selected RF frequency along a measurement grid;

(c) steering said antenna beam in said second direction and taking near-field amplitude and phase data at said selected RF frequency along said measurement grid;

(d) transforming to the far field said near-field data taken with said beam steered in said first direction to provide a set of first direction far-field data points;

(e) transforming to the far field said near-field data taken with said beam steering in said second direction to provide a set of second direction far-field data points;

(f) selecting a subset of said first direction far-field data points all of which are within visible space and a subset to said second direction far-field data points all of which are within visible space; and

(g) combining said subsets to represent a complete fundamental period of the array spectrum comprised of some

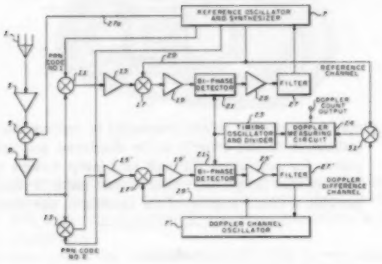
first direction data points and some second direction data points each of which is within visible space in the far-field data set from which it is taken.

4,453,165

DIFFERENTIAL DOPPLER RECEIVER

Reuben E. Maine, Charlottesville, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,433
Int. Cl.³ G01S *5/02, 3/52*
U.S. Cl. 343—418 **9 Claims**



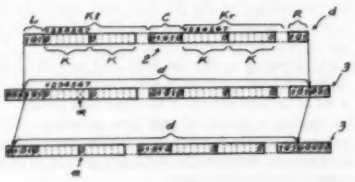
1. A differential Doppler receiver comprising antenna means for simultaneously receiving radio frequency signals from first and second relatively moveable remote transmitters having the same base frequency, said receiver including means for separating the signals from the first and second transmitters from the combined received signal, a reference channel for processing one of the separated signals and a Doppler difference channel for processing the other separated signal, said receiver further containing timing oscillator means, each of said channels including a phase locked loop in which a voltage controlled oscillator is regulated in accordance with the magnitude of the signal flowing in that loop, each of said phase locked loops further including means for heterodyning the separated signal flowing in that loop with a local oscillator signal derived from the voltage controlled oscillator in that loop, said voltage controlled oscillator being adjusted so that in the phase locked condition the signal from the heterodyning means is equal in phase and frequency to the signal from said timing means, said receiver further containing means to provide an output signal representative of the difference in frequency between the two local oscillator signals.

4,453,166

METHOD AND DEVICE FOR AVOIDING DEFECTIVE ELEMENTS IN A THERMAL PRINTER

Michio Enoto, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Aug. 17, 1982, Ser. No. 408,842
Claims priority, application Japan, Aug. 19, 1981, 56-130477
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—1.1 **8 Claims**



3. In a device for avoiding defective elements in a thermal printer having a thermal head on which a greater number of heating elements than the number of bits in printing data are linearly arranged, a heating element driving section including driving elements equal in number to and respectively associated with said heating elements, and an output register having the same number of bits as said heating elements, the improvement comprising:

a heating timing signal generating section,

a data generating section which receives printing data, converts it into printing data of predetermined format and delivers it to said output register,

a control section which, when receiving a printing instruction signal, transfers the printing data from said data generating section to said output register in such a condition that said printing data is shifted a suitable number to the left or right so as to avoid defective elements,

a shift pulse generating section for delivering shift pulses to said data generating section and output register according to instructions from said control section,

a module counter for storing and setting the number of modules in printing data,

a right-hand side element counter for storing the number of non-heating elements on the right side of said heating elements,

a left-hand side counter for storing the number of non-heating elements on the left side of said heating elements,

a counter control section for setting count numbers for the right-hand side and left-hand side element counters according to the number that the printing data is shifted so that the sum of the count numbers for the module counter, and right-hand side and left-hand side element counters is equal to the number of bits in the output register, and

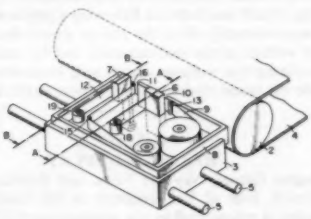
a shift number calculating section whereby the number the printing data to be fed into said output register is to be shifted to the right or left is calculated according to the position of a defective heating element.

4,453,167

PRINTER WITH INK CORRECTING RIBBON

Junichi Motoyoshi, Funabashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 260,388, May 4, 1981, abandoned. This application Aug. 4, 1982, Ser. No. 405,308
Claims priority, application Japan, May 14, 1980, 55-63791
Int. Cl.³ G01D *15/10*; **B41J** *3/20, 11/60, 29/36*
U.S. Cl. 346—76 PH **3 Claims**



1. A thermal printer for use with apparatus including a platen, comprising:

(a) a thermal head provided with heat generating elements energizable toward the surface of the platen;

(b) a carriage mounting thereon said thermal head and being mounted to move said thermal head in parallel with the platen; and

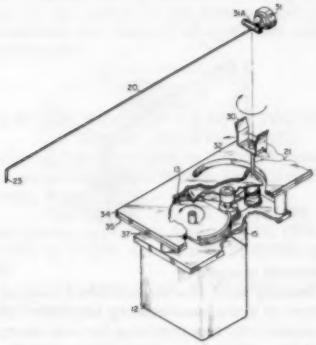
(c) an error correcting head mounted on said carriage and moving in parallel with said platen.

4,453,168

RECTILINEAR PEN MOVEMENT APPARATUS FOR RECORDING GALVANIC SKIN RESISTANCE

Richard L. Shirley, Lafayette, Ind., assignor to Lafayette Instrument Co., Inc., Lafayette, Ind.

Filed Jul. 22, 1982, Ser. No. 400,736
Int. Cl.³ G01D *15/16, 15/24*
U.S. Cl. 346—117 A 6 Claims



1. An improved rectilinear pen movement apparatus responsive to an electrical input signal representing a measurement of galvanic skin resistance in order to provide a recorded analog representation of the input signal, said apparatus comprising;

a support frame;

a drive motor mounted to said frame, said drive motor having an output means, said output means having a cylindrically shaped surface, said output means capable of rotating on a first axis in response to an input signal providing an electrical measurement of galvanic skin resistance;

a feedback means mounted to said frame, said feedback means having an input shaft capable of rotating on a second axis parallel to said first axis;

a first belt engaging said output means and said input shaft to rotate said input shaft in proportion to the rotation of said output means, said feedback means sensing the rotation of said input shaft and producing a negative feedback signal;

a swing disc connected to said input shaft and rotatable on said second axis;

a pen support means rotatably mounted to said swing disc for rotation on a third axis parallel to said first and second axes as said pen support means rotates about said second axis;

a stationary hub rigidly connected to said frame. said hub having a surface which is cylindrically shaped about said second axis;

a second belt engaging said hub and said pen support means in order to rotate said pen support means as said swing disc is rotated on said second axis;

a recording pen having two ends, said first end connected to said support means, said second free end movable rectilinearly in response to rotation of said output means in order to provide a recorded analog representation of said input signal.

4,453,169

INK JET APPARATUS AND METHOD

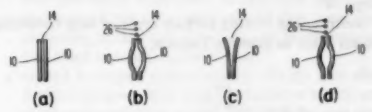
John G. Martner, Brookfield, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 7, 1982, Ser. No. 366,251
Int. Cl.³ G01D *15/18;* F04B *43/12*
U.S. Cl. 346—140 PD 25 Claims

1. An ink jet apparatus comprising:

a flexible member juxtaposed to another member so as to form a chamber therebetween terminated in an ink ejection orifice;

support means for cantilevered support of said flexible members;



ink supply means coupled to said chamber; and

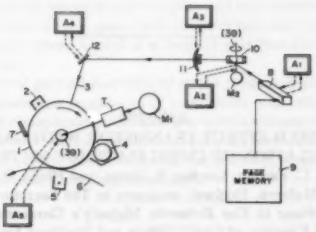
drive means coupled to said flexible member for generating a peristaltic deflection along said member and ejecting a droplet from said orifice.

4,453,170

IMAGE FORMING APPARATUS WITH VIBRATION COMPENSATION

Kozo Arao, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1981, Ser. No. 335,461
Claims priority, application Japan, Jan. 7, 1981, 56-1335
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—160 10 Claims



1. An image forming apparatus, comprising:

a movable photosensitive member;

optical means including an optical element, for scaanning said photosensitive member with a light beam in a direction crossing the moving direction of said photosensitive member, to form an image corresponding to information to be recorded;

detecting means for detecting vibration of said optical element of said optical means and for generating an output signal indicative thereof;

vibrating force generating means for generating a mechanical vibrating force which is applied to said optical element; and

control means for controlling said vibrating force generating means in response to the output signal from said detecting means in order to reduce fluctuation, in the moving direction of said photosensitive member, of the position of said light beam on said photosensitive member.

4,453,171

REDUCED ELECTRODE WEAR IN ELECTROLYTIC PRINTING BY PH CONTROL OF THE PRINT REACTION ZONE

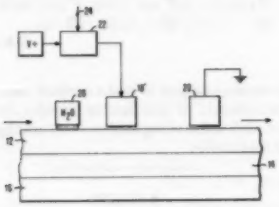
William E. Bernier, and Charles R. Pigos, both of Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1982, Ser. No. 392,208
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—165 17 Claims

1. A method of controlling the pH of the print reaction zone

of an electrolytic printer having at least one anode and one cathode, print control means, a recording medium having a treated surface layer including a leuco dye and a supply of fluid for wetting said recording medium, said method comprising the steps of:

(a) wetting said treated surface layer of said recording medium prior to printing thereon;



(b) transporting said wetted surface layer to a print reaction zone beneath said anode and cathode;

(c) applying an electrical pulse to said anode to cause said leuco dye to shift into the visible spectrum; and

(d) maintaining said print reaction zone at a pH greater than 5.0 to 7.0.

4,453,172

FIELD EFFECT TRANSISTOR WITH GATE INSULATION OF CUBIC FLUORIDE MATERIAL

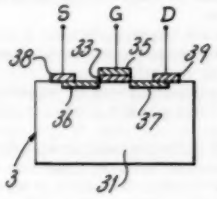
Robin F. C. Farrow; Gordon R. Jones, and Philip W. Sullivan, all of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Dec. 1, 1981, Ser. No. 326,234

Claims priority, application United Kingdom, Dec. 23, 1980, 8041169

Int. Cl.³ H01L *29/78, 27/12, 45/00, 49/02*

U.S. Cl. 357—23.15 **6 Claims**



1. A field effect transistor device comprising a semiconductor substrate, source and drain regions spaced apart on the substrate, and a gate arranged between the source and drain regions and separated from the substrate by a layer of electrically insulating material, the insulating layer being a cubic fluorite structure material selected from the group containing

$Ca_yCd_{1-y}F_2$ where $0<y<1$,

$Sr_zBa_{1-z}F_2$ where $0<z<1$,

$Ba_xCa_{1-x}F_2$ where $0<x<1$,

having a lattice parameter that is different from the lattice parameter of the substrate by less than 1% over a temperature range of 25° C. to 200° C.

4,453,173

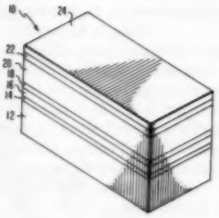
PHOTOCELL UTILIZING A WIDE-BANDGAP SEMICONDUCTOR MATERIAL

David E. Carlson, Yardley, Pa., and Brown F. Williams, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,103

Int. Cl.³ H01L *45/00, 27/14, 31/00, 29/04*

U.S. Cl. 357—30 **8 Claims**



1. A photocell comprising:

a wide bandgap layer of a semiconductor material; and

a first layer of hydrogen-containing amorphous silicon of a first conductivity type overlying the wide bandgap layer;

a second layer of hydrogen-containing amorphous silicon overlying said first layer and having substantially intrinsic conductivity;

a third layer of hydrogen-containing amorphous silicon overlying the second layer and having the opposite conductivity type to the first layer;

means for electrically contacting the wide bandgap and third layers;

wherein the wide bandgap layer has a bandgap energy greater than that of the first layer and has the same conductivity type as the first layer.

4,453,174

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH NON-VOLATILE SEMICONDUCTOR MEMORY CELLS AND MEANS FOR RELIEVING STRESS THEREIN

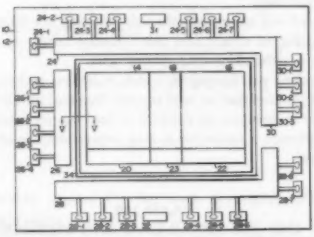
Yuichi Kawasaki, Yokohama; Sumio Tanaka, Tokyo; Hiroshi Iwahashi, Yokohama; Masamichi Asano, Tokyo; Shinichi Maekawa, and Masazi Mito, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 22, 1980, Ser. No. 152,292

Claims priority, application Japan, May 25, 1979, 54-64009

Int. Cl.³ H01L *29/02*

U.S. Cl. 357—41 **4 Claims**



1. A semiconductor integrated circuit device comprising:

(a) a semiconductor substrate;

(b) an array of insulated gate semiconductor memory cells formed on said substrate with said array including a peripheral circuit section, also formed on said substrate, having at least a part of a control circuit for selectively

executing read/write operation of said semiconductor memory cells;

(c) a field insulating layer formed on said semiconductor substrate and surrounding said array; and

(d) means for blocking distortion developed during manufacturting of said device peripherally to said array from being transferred to said array of insulated gate semiconductor memory cells, wherein said means for blocking is a groove passing through said field insulating layer substantially to the surface of said substrate and substantially surrounding said array of insulated gate semiconductor memory cells.

4,453,175
MOS STATIC RAM LAYOUT WITH POLYSILICON RESISTORS OVER FET GATES

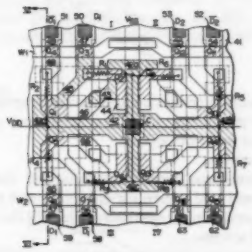
Shoji Ariizumi, Tokyo, and Makoto Segawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 16, 1980, Ser. No. 187,794

Claims priority, application Japan, Sep. 19, 1979, 54-119234; Oct. 4, 1979, 54-127276; Apr. 17, 1980, 55-50788; Apr. 17, 1980, 55-50789

Int. Cl.³ H01L *27/04, 29/78;* **G11C** *11/40*

U.S. Cl. 357—41 **3 Claims**



1. A semiconductor device comprising:

a first semiconductor region having first to fourth memory cell-forming areas on a semiconductor substrate of a first conductivity type,

said first semiconductor region having a second conductivity type opposite to said first conductivity type and including a center contact and first to fourth extension regions which extend in four directions away from said center contact, two along a row direction and two along a column direction, thereby dividing the major surface of said semiconductor substrate into said first to fourth memory cellforming areas, each of said cellforming areas including:

a second semiconductor region of said second conductivity type having one end formed proximate said first extension region which is provided in said row direction, for forming a first driver transistor between said second semiconductor region and said first extension region;

a third semiconductor region of said second conductivity type formed proximate said second extension region which is provided in said column direction, for forming a second driver transistor between said third semiconductor region and said second extension region;

a fourth semiconductor region of said second conductivity type formed close to the other end of said second semiconductor region for forming a first switching transistor between said fourth semiconductor region and said second semiconductor region;

fifth and sixth semiconductor regions of said second conductivity type formed close to each other, for forming a second switching transistor therebetween;

a first L-shaped polycrystalline silicon gate electrode formed between said first extension region and said one end of said second semiconductor region and being the gate electrode of said first driver transistor, one end of said first gate electrode extending in said column direction and being connected to said fifth semiconductor region, and the other end of said first gate electrode extending in said row direction and being connected to said third semiconductor region;

a second L-shaped polycrystalline silicon gate electrode formed between said second extension region and said third semiconductor region and being the gate electrode of said second driver transistor, one end of said second gate electrode extending in the row direction and being connected to said second semiconductor region;

a polycrystalline silicon word line formed in the row direction on a gate insulation layer and being a common gate electrode of said first and second switching transistors;

a first resistance polycrystalline silicon layer formed above said first polycrystalline silicon gate electrode on an insulation layer therebetween, one end of said first resistance layer being in contact with a junction of said fifth semiconductor region and said first polycrystalline silicon gate electrode such that said first resistance layer is used as a load for said second driver transistor;

a second resistance polycrystalline silicon layer formed above said second polycrystalline gate electrode on an insulation layer therebetween, one end of said second resistance layer being in contact with a junction of said second semiconductor region and said second polycrystalline silicon gate electrode such that said second resistance layer is used as a load for said first driver transistor;

a metal ground line formed in the column direction on an insulation layer so as to pass above said center contact for connection with said first semiconductor region; and

first and second metal data lines formed in the column direction, and connected, respectively, to said first and second switching transistors.

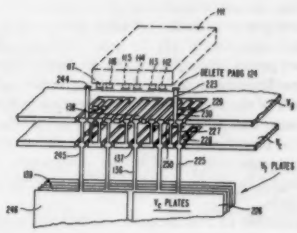
4,453,176
LSI CHIP CARRIER WITH BURIED REPAIRABLE CAPACITOR WITH LOW INDUCTANCE LEADS

Dudley A. Chance, Danbury, Conn., and Gerard V. Kopcsay, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,485

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—51 **9 Claims**



3. In a carrier for a large scale integrated circuit chip system, said carrier having an upper surface on which at least one chip is bonded, said carrier including a capacitor structure located at a level below a chip site with the parallel plates of the capacitor extending within the body of said carrier, the improvement comprising said capacitor being formed of a single capacitor segment forming a first plate and a plurality of capacitor segments forming a complementary segmented plate juxtaposed

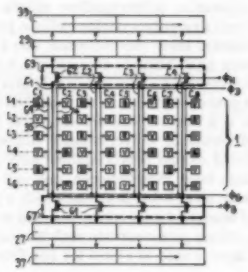
with said first plate, with each of said plurality of capacitor segments being connected by at least one via connected from said segment to a corresponding deletable strap connection on said upper surface of said carrier whereby a defective one of said capacitor segments can be eliminated from connection in any circuit in which it is included by means of an externally applied tool applied to said upper surface of said carrier.

4,453,177

COLOR TELEVISION CAMERA

Jean L. Berger, and Pierrick Descure, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 25, 1982, Ser. No. 361,722
Claims priority, application France, Mar. 31, 1981, 81 06432
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **18 Claims**



1. A device for analysing color images, using electric charge transfer, comprising:

a photosensitive assembly, comprising:

a plurality of elementary photosensitive zones, called points, in which electric charges are created depending on the degree of illumination received, formed on the same semiconductor substrate in N lines and M columns and insulated from each other, forming a matrix, each of these elementary zones comprising an MOS capacity forming a first charge collection zone and comprising a grid which is common to the capacities of the same line, and a second charge collection zone, electrically coupled to the capacity, the whole of the point receiving a colored filter for making it sensitive only to one predefined color,

connection and control means for supplying in parallel through column connections electric charges created in the M points of the same line, successively for the N lines, these means comprising a plurality of reading diodes, arranged in columns between the points so as to receive each one, sucessively, to order, the charges from at least two points belonging to at least two different lines,

means forming a screen for the charges, placed between each of the points and the connection means, these screen means comprising a plurality of grids brought to a constant potential at least during transfer of charges from the photosensitive points in the connection means and arranged in columns between the reading diodes and the points,

an assembly of two memories called line memories, formed in the same semiconductor substrate, receiving in parallel the electric charges supplied by the connection and control means, so that each point of the matrix is assigned to one only of the two line memories, one of these memories being connected only to points of the same color,

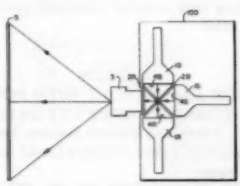
an assembly of two analog shift registers receiving in parallel respectively the charges supplied by the two line memories and each delivering in series an electric analysis signal of the image.

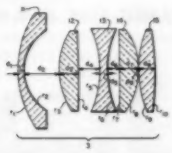
4,453,178

PROJECTION TELEVISION APPARATUS

Yoshito Miyatake, Moriguchi; Yoshitomi Nagaoka, Neyagawa, and Yasuo Nakajima, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,471
Claims priority, application Japan, Dec. 17, 1980, 55-179460
Int. Cl.³ H04N *9/31*
U.S. Cl. 358—60 **9 Claims**





1. A projection television apparatus comprising:

an image producing means for producing a picture image which is to be projected;

a screen; and

a retrofocus lens means between said image producing means and said screen for enlarging said image from said image producing means and projecting the enlarged image on said screen.

3. A projection television apparatus according to claim 1, wherein said image producing means comprises: two monochromatic cathode-ray tubes for displaying thereon color images, respectively; and a mirror block positioned for receiving said color images from said cathode-ray tubes and combining them into said picture image and directing said image into said retrofocus lens means, said retrofocus lens means having a back focus longer than said mirror block.

4,453,179

VARIABLE COLOR CATHODOLUMINESCENT COMPOSITION, METHOD, AND DISPLAY DEVICE UTILIZING SAME

Thomas E. Peters, Chelmsford, and James R. McColl, Concord, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 7, 1982, Ser. No. 375,791
Int. Cl.³ H01J *29/20*; H04N *9/27*; C09K *11/10*; H01J *29/52*
U.S. Cl. 358—72 **4 Claims**

4. A method for varying color emitted by a cathodoluminescent phosphor having the formula:

$$Zn_{(2-x)}Mn_xSi_{(1-2y)}Al_{2y}P_yO_4$$

wherein

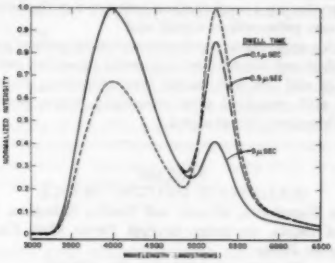
$$0<x\leq 0.01$$

$$0<y\leq 0.05$$

from green to blue, said phosphor being deposited as a layer in a cathode ray tube; said method comprising:

exciting the phosphor layer by an excitation electron beam

at a low current density to produce a green emission peak at about 5230 Angstroms; and



increasing the current density of said excitation electron beam to a higher current density to produce a blue emission peak at about 4000 Angstroms.

4,453,180

LIGHT PICK-UP DEVICE

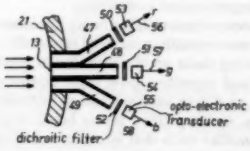
Heinrich Juergensen, Raisdorf, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,005

Claims priority, application Fed. Rep. of Germany, May 9, 1981, 3118459

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **30 Claims**



20. In a scanning device for point-by-point and line-by-line opto-electronic scanning of an information bearing colored master mountd on a carrier for supporting said master, said device including means for projecting a scanning light beam on the master, which light beam is modulated by the information of the colored master to form modulated light, a light pickup device for collecting the modulated light from the scanned colored master and at least three separate opto-electronic transducers with each transducer having a specific dichroitic filter for separating the colors and generating color signals, said light pickup device consisting of a hollow body having an inside reflective surface, a light entrance opening facing the colored master for receiving the modulated light and having a light pickup area for receiving the modulated light collected by said hollow body, the improvement comprising:

(a) the light pickup area including a light pickup opening in the hollow body receiving three separate light entrance faces of three separate optical-shaped converters having three light exit faces, the light exit faces of said optical light converter being coupled separately to said dichroitic filters and said opto-electronic transducers, said light entrance faces having an aperture angle β and filling the light pickup opening;

(b) the reflective surface of the hollow body lying opposite the light entrance face at least in the area covered by the aperture angle being a diffused reflector and the reflective surface of the hollow body lying adjacent the light entrance faces being a mirror reflector;

(c) said diffused reflector being shaped in such a manner and being aligned to the light entrance face so that a large portion of the modulated light is converted by said diffused reflector into diffused light and reflected onto the light entrance faces;

(d) said diffused reflector and said mirror reflector being disposed to one another in such a manner that the portion of diffused light not reflected onto the light entrance faces and the portion of modulated light directly striking the mirror reflector are reflected by said mirror reflector to the diffused reflector and converted into diffused light; and

(e) the light pickup opening being positioned in the hollow body relative to the light entrance opening so that the modulated light does not directly strike the light entrance faces but is converted into diffused light by said diffused reflector before being received by said entrance faces.

4,453,181

SCANNING-IMAGE FORMING APPARATUS USING PHOTO RESPONSE SIGNAL

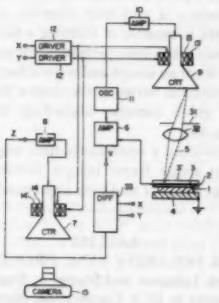
Chusuke Munakata, and Hideki Kohno, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,889

Claims priority, application Japan, Oct. 15, 1980, 55-145746

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—101 **18 Claims**



1. A scanning-image forming apparatus using a photo-response signal, comprising photon beam generation means for generating a photon beam, photon beam scanning means for scanning a surface of a semiconductor specimen with said photon beam in a pattern defined by movement of said beam in orthogonal directions, detection means for detecting the photo-response signal generated in said semiconductor specimen by the scanning with said photon beam, amplification means for amplifying the detected photo-response signal, differential means for providing a 2nd derivative of the amplified photo-response signal along said orthogonal directions, and display means for displaying an image by employing said 2nd derivative of said photo-response signal as a modulation signal.

4,453,182

HIGH SPEED IMAGING TELEVISION SYSTEM

William O. Wilkinson, and David W. Rabenhorst, both of Silver Spring, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Oct. 21, 1981, Ser. No. 313,245

Int. Cl.³ H04N *5/30*

U.S. Cl. 358—108 **10 Claims**

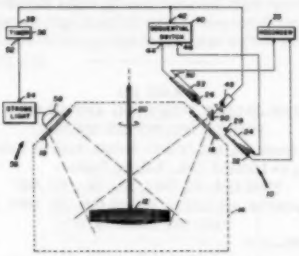
1. An apparatus for providing a continuous recording of a time sequential series of events wherein the time duration of each event is less than the time interval required before a video camera is capable of forming a successive image and for forming a single video output signal of independent time sequential images of the sequential series of events; comprising:

a number N video cameras;

means for providing an optical image from the same view point of said time sequential series of events at said N video cameras repeatably through video cameras 1 through N;

means for sequentially activating each of said N video cameras for providing an independent single frame image of each of said time sequential series of events;

means for triggering said means for sequentially activating each of said N video cameras repeatably 1 through N



according to a preselected timing pattern determined by a time x, where x is said time interval required before a video camera is capable of forming a successive image, a time d, where d is a time permitted for each of said video cameras to form an image and a preselected time t, where t is a time interval between successive images formed by successive video cameras according to a relationship $(d+t)N=x$; and

means for providing a continuous time sequenced series of independent single frame images forming a continuous video output signal of said time sequenced series of events.

4,453,183

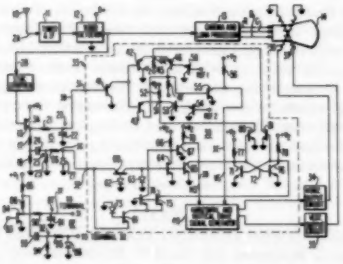
DUAL POLARITY SYNC PROCESSOR

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,308

Int. Cl.³ H04N *5/06*

U.S. Cl. 358—148 **14 Claims**



1. Synchronizing apparatus for use in a television receiver having a source of at least one of horizontal and vertical synchronizing pulse-related signals, said synchronizing apparatus capable of being used in said television receiver regardless of the polarity of said one synchronizing pulse-related signal, said apparatus comprising:

first sync processing means responsive to said one synchronizing pulse-related signal of a first polarity for producing a synchronized output signal when energized;

second sync processing means responsive to said one pulse-related signal of a second polarity for producing a synchronized output signal when energized;

means responsive to said synchronizing pulse-related signals for producing a control signal indicative of the polarity of said one pulse-related signal; and

means for applying said polarity-indicative control signal to said first and second sync processing means for energizing one of said first and second sync processing means such that said energized sync processing means produces a synchronized output signal.

4,453,184

SOLID STATE IMAGING DEVICE

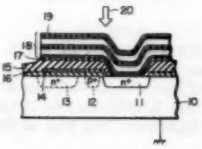
Yoshihiro Hamakawa, Hyogo, and Yosuke Nakajima, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1981, Ser. No. 329,097

Claims priority, application Japan, Dec. 12, 1980, 55-175508

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **16 Claims**



1. A solid state imaging device of the type having a photoconductive layer and a scanning circuit in cooperative relationship, the improvement comprising:

said photoconductive layer being a valence electron controllable non-crystalline material essentially containing silicon and being made up of a plurality of repetitive p-i-n layers, each said repetitive p-i-n layer comprising a p-type sublayer, an n-type sublayer and an intrinsic (i) layer therebetween, said repetitive layers being positioned relative to one another such that adjacent sublayers are different in electrical conductivity.

4,453,185

AUTOMATIC DIAPHRAGM CONTROL DEVICE FOR A CLOSED CIRCUIT TELEVISION CAMERA

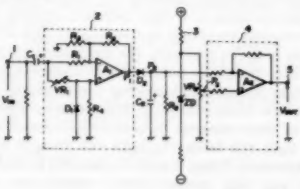
Tohru Shikano, and Terumi Ogasawara, both of Tokyo, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 365,046

Claims priority, application Japan, Sep. 22, 1981, 56-149815

Int. Cl.³ H04N *5/26*

U.S. Cl. 358—228 **12 Claims**



1. A diaphragm control for a video camera producing a video output signal having bright signal portions and dark signal portions representative of bright and dark areas of the area monitored by said video camera, respectively, said control comprising:

input means for receiving said video output signal;

means for adjustably weighting said video output signal to

vary the weight of said bright signal portions with respect to said dark signal portions while holding the average strength of said video output signal constant, said means for adjustably weighting producing a weighted signal and including,

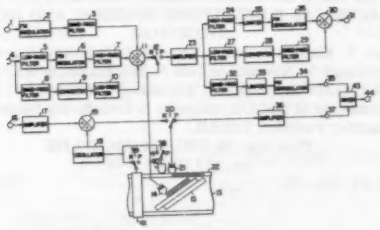
selective polarity invertible amplifier means for selectively varying the amplitude of said video output signal between a predetermined level and its inverse; and

comparator means for producing a comparator output corresponding to the difference between a separately provided reference signal and the average strength of said weighted signal, said comparator output being used as a control signal for the camera diaphragm.

4,453,186
VIDEO AND SOUND SIGNAL RECORDING AND REPRODUCING DEVICE

Yoshizumi Watatani; Shigeyuki Ito, both of Yokohama, and Katsuo Mohri, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 294,059
Claims priority, application Japan, Aug. 25, 1980, 55-115958
Int. Cl.³ H04N *5/782*
U.S. Cl. 358—330 **22 Claims**



1. A sound signal recording and reproducing device suitable for use in a recording and reproducing apparatus including means for recording a picture signal on a magnetic tape by a rotary head, said device comprising:

first sound signal recording and reproducing means for multiplexing a first sound signal with a picture signal and recording said first sound signal and said picture signal on the same first recording track in concurrent relation by said rotary head; and

second sound signal recording and reproducing means including a stationary head for recording a second sound signal on a second recording track which is spaced apart from said first recording track on the magnetic tape and extends in parallel with the traveling direction of the magnetic tape.

4,453,187
IMAGE SENSOR

Kazumi Komiya, and Minoru Kanzaki, both of Yokosuka, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,396
Claims priority, application Japan, Jun. 25, 1981, 56-97535; Sep. 30, 1981, 56-156634
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **8 Claims**

1. An image sensor comprising:

a plurality of photoconductive cells formed on an insulating substrate, the photoconductive cells being divided into m groups, each consisting of n photoconductive cells;

m common electrodes formed on the insulating substrate and each connected to one end of the photoconductive cells of one of the m groups;

n individual select electrodes formed on the insulating substrate and each connected to the other ends of corresponding ones of the photoconductive cells of the m groups;

m group select switches connected at one end to the common electrodes, respectively;

a group select driver connected to control terminals of the m group select switches, for generating group select pulses to sequentially turn them ON;

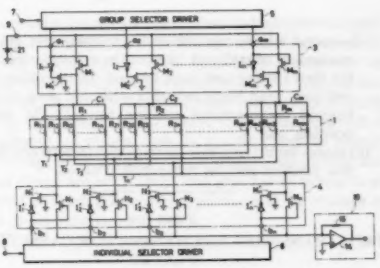
n individual select switches connected at one end to the n individual select electrodes, respectively;

an individual select driver connected to control terminals of the n individual select switches, for generating individual select pulses to sequentially turn them ON;

a power source connected to one of the m group select switches and the n individual select switches at the other ends thereof;

a load connected to the other of the m group select switches and the n individual select switches at the other ends thereof;

m common electrode grounding means respectively connected to the m common electrodes, for grounding those



of the common electrodes connected to those of the group select switches in the OFF state without exerting any substantial influence on the output from the photoconductive cell connected to the group select switch in the ON state and the individual select switch in the ON state at the same time; and

n individual select electrode grounding means respectively connected to the n individual select electrodes, for grounding therethrough those of the individual select electrodes connected to those of the individual select switches in the OFF state without exerting any substantial influence on the output from the photoconductive cell connected to the group select switch in the ON state and the individual cell select switch in the ON state at the same time;

wherein the resistance value of the load is selected sufficiently smaller than a composite resistance value of the photoconductive cells connected in parallel to the load when one of the group select switches and one of the individual select switches are turned ON simultaneously.

4,453,188
DISK DRIVE

Richard E. Johnson, Los Altos; Roger O. Williams, Campbell; Ronald W. Higgins, San Jose, and David M. Lewis, Santa Cruz, all of Calif., assignors to Amlyn Corporation, San Jose, Calif.

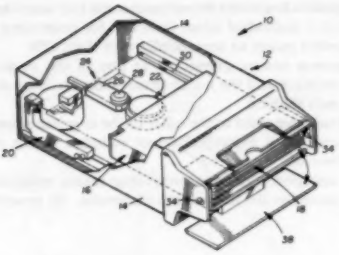
Filed Apr. 10, 1981, Ser. No. 253,015
Int. Cl.³ G11B *21/08*
U.S. Cl. 360—78 **25 Claims**

1. Apparatus for moving a data storage device between a retrievable position at which the data storage device is stored and an operative position at which the data storage device is used, comprising:

(a) a pick head having a pair of openable and closeable jaws;

(b) carriage means for carrying said pick head between the retrievable position and the operative position;

(c) first pick cam means for opening said jaws during movement of said pick head towards the retrievable position and for then closing said jaws about the data storage device at the retrievable position, said pick head being movable with said jaws closed from the retrievable position towards the operative position;



(d) second release cam means for opening said jaws during movement of said pick head at the operative position and for then closing said jaws beyond the operative position, said pick head being movable with said jaws closed from beyond the operative position towards the retrievable position; and

(e) means for driving said carriage means between the operative position and the retrievable position.

4,453,189

TAPE TRANSPORT MECHANISM FOR CASSETTE TAPE PLAYER

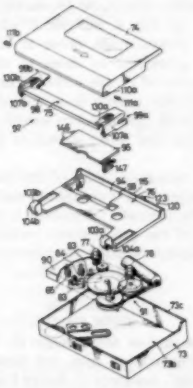
Mitsuru Ida, Koshigaya, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,669

Claims priority, application Japan, Dec. 29, 1980, 55-188031

Int. Cl.³ G11B *5/008, 15/00, 17/00*

U.S. Cl. 360—96.3 **17 Claims**



1. A tape transport mechanism for a recording and/or reproducing apparatus having parallel first and second reel shafts, comprising:

a first reel shaft gear rotatably coupled to said first reel shaft;

a second reel shaft gear rotatably coupled to said second reel shaft;

a reverse gear mounted for axial movement parallel to the axes of said reel shafts between first and second positions in which said reverse gear meshes continuously with said first reel shaft gear;

a driving gear mounted for axial movement parallel to said axes of the reel shafts between first, second and third successively arranged positions;

first operating means actuable to move said driving gear in an axial direction from said first position to said second position thereof for meshing engagement with said reverse gear in said first position of the latter, whereby to drive said first reel shaft in a first rotational direction through said reverse gear and said first reel shaft gear in a first mode of the apparatus; and

second operating means actuable to move said driving gear in an axial direction to said third position thereof and also to move said reverse gear in an axial direction to said second position of the latter for disengaging said reverse gear in said second position of the latter from said driving gear and for meshing engagement of said driving gear in its said third position with said second reel shaft gear to drive the second reel shaft in a second rotational direction through said driving gear and said second reel shaft gear in a second mode of the apparatus.

4,453,190

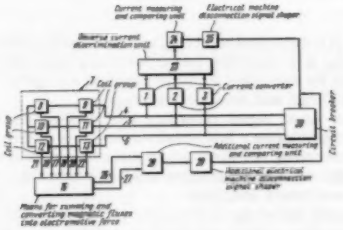
METHOD OF SHORT CIRCUIT PROTECTION OF ELECTRICAL THREE-PHASE MACHINE AND DEVICE THEREFOR

Mark Y. Kletsel, Pavlodar; Valentin E. Polyakov, Sverdlovsk; Alexandr N. Novozhilov; Ivan N. Solodukhin, both of Pavlodar; Yakov Z. Chepeljuk, Ekibastuz, and Dmitry F. Baida, Ermak, all of U.S.S.R., assignors to Pavlodarsky Industrialny Institut, Pavlodar, U.S.S.R.

Filed Apr. 23, 1982, Ser. No. 371,195

Int. Cl.³ H02H *7/08*

U.S. Cl. 361—31 **13 Claims**



2. A device for short circuit protection of a three-phase electrical machine, having loops of end portions of coil groups for each of three phases of a stator winding, comprising:

a first current converted having an input and an output and connected by said input to the first of said phases;

a second current converter having an input and an output and connected by said input to the second of said phases;

a third current converter having an input and an output and connected by said input to the third of said phases;

a reverse current discrimination unit having an input and an output and connected by said input to said outputs of said current converters;

a first current measuring and comparing unit having an input and an output and connected by said input to said output of said reverse current discrimination unit;

a first three-phase electrical machine disconnection signal shaper having an input and an output and connected by said input to said output of said first current measuring and comparing unit;

a circuit breaker of said three-phase electrical machine, connected to said output of said first disconnection signal shaper and to said phases;

a means for summing and converting magnetic fluxes into electromotive force, having inputs whose number is equal to the number of said coil groups, and a first output, and a second output, and connected by said inputs to said loops of said coil groups;

a second current measuring and comparing unit having a first input, a second input, and an output, and connected by said inputs to said first and second outputs of said means for summing and converting magnetic fluxes into electromotive force;

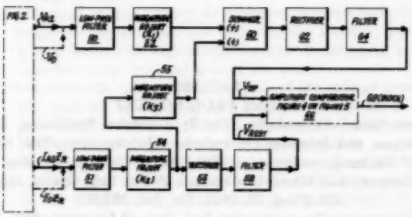
a second three-phase electrical machine disconnection signal shaper having an input and an output, and connected by said input to said output of said second current measuring and comparing unit, and by said output to said circuit breaker of said electrical machine.

4,453,191

OVERVOLTAGE DIRECTIONAL RELAY

Stanley B. Wilkinson, Havertown, Pa., assignor to General Electric Company, King of Prussia, Pa.

Filed Jul. 29, 1982, Ser. No. 403,270
Int. Cl.³ H02H *3/38*
U.S. Cl. 361—84 **11 Claims**



1. An overvoltage directional relay for association with a three phase transmission line and adapted to provide a blocking signal in response to the occurrence of a fault behind the relay but providing no blocking signal in response to the occurrence of a fault on the transmission line in front of the relay, the relay comprising:

(a) means for developing quantities V_2 and I_2Z_R, where:

V_2 is a signal representative of the negative sequence component of the phase to ground or phase to phase voltages of the transmission line,

I_2 is a signal representative of the negative sequence component of the phase currents of the transmission line when V_2 is related to phase to ground voltage and is a signal representation of the negative sequence component of the delta currents when V_2 is related to phase to phase voltage,

Z_R is a replica impedance of the equivalent negative sequence source impedance behind the relay and is of a magnitude equal to or greater than one-half of said equivalent negative sequence source impedance,

(b) summing means for summing K_1V_2 and (K_2) $(K_3)I_2Z_R$ and developing an operating signal V_{OP} which is proportional to the sum of K_1V_2 and(K_2) (K_3) (I_2Z_R), where K_1, K_2, and K_3 are selectable constants,

(c) means for developing a restraining signal V_{REST} which is proportional to (K_2) (I_2Z_R),

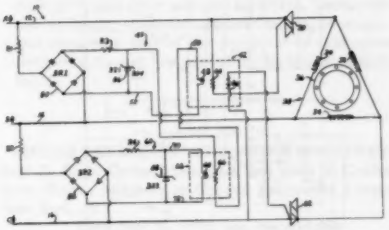
(d) amplitude comparator means for comparing the amplitude of operation signal V_{OP} with the amplitude of the restraining signal V_{REST} and for developing a blocking signal when the amplitude of V_{OP} exceeds V_{REST}.

4,453,192

PROTECTIVE DEVICE FOR THREE PHASE INDUCTANCES

James O. Parks, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,512
Int. Cl.³ H02H *3/24*
U.S. Cl. 361—92 **23 Claims**



1. A protective circuit for three phase inductances comprising: voltage reduction means including at least one zener diode; voltage sensor means which senses the presence of all three phases of a voltage to be applied to a three phase inductance connected to said voltage reduction means; circuit means connecting said voltage sensor means to gate means which if all three phases are present remains in a first position permitting the voltage to be applied to a three phase inductance; and if all three phases are not present, said gate means moves to an open circuit position preventing application of the voltage to the three phase inductance.

4,453,193

OVERCURRENT PROTECTION FOR PUSH-PULL CIRCUITS

Rex H. Huang, Salem; John R. Hale, Roanoke, and William D. Brackman, Jr., Salem, all of Va., assignors to General Electric Company, Salem, Va.

Filed Oct. 12, 1982, Ser. No. 433,467
Int. Cl.³ H02H *7/10, 7/20*
U.S. Cl. 361—98 **9 Claims**

1. In a push-pull network having alternately activated first and second current switches controlling drive current through, respectively, first and second windings of an output transformer, overcurrent protection circuitry comprising:

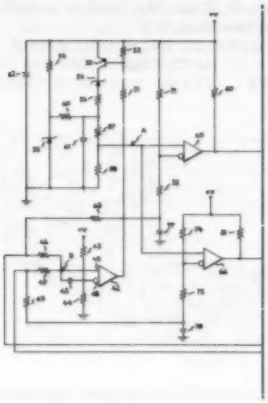
(a) first and second current sensing means providing first and second sensing signals indicative of the instantaneous current through said first and second current switches, respectively;

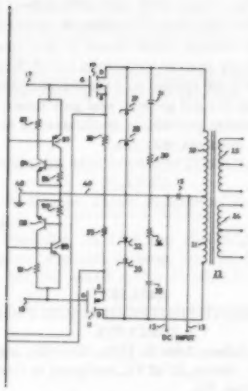
(b) synchronizing means responsive to said first and second sensing signals to produce a synchronizing signal indicative of the active periods of said first and second current switches;

(c) a reference source responsive to said synchronizing signal to produce a periodic reference signal whose value is time dependent during the active periods of said first and second current switches;

(d) comparing means responsive to said first and second sensing signals and said reference signal to produce first and second protection signals indicative of whether said first and second sensing signals exceed said reference signal as an indication of overcurrent in said first and second current switches, respectively; and

(e) first and second protection means responsive to said first and second protection signals to deactivate said first and





second current switches whenever an overcurrent occurs therein, respectively.

4,453,194

INTEGRATED POWER CIRCUIT WITH CURRENT SENSING MEANS

Richard F. Frankeny, Elgin, and Charles R. Linton, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,675

Int. Cl.³ H01H *47/32*

U.S. Cl. 361—154 **4 Claims**

1. An integrated circuit for driving an inductor load comprising

a power transistor in series with said inductor load for operationally conducting a load current of at least 1 amperes,

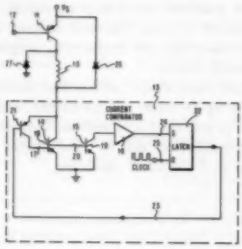
means for applying a predetermined voltage across said power transistor,

a sensing transistor having an emitter-base junction area less than 10^{-3} times the emitter-base junction area of said power transistor and a base terminal common with the base terminal of said power transistor,

means for applying a predetermined voltage across said sensing transistor,

means for applying a voltage to said common base terminals to activate both power and sensing transistors whereby a small current mirroring the load current flows through the sensing transistor,

means for sensing the current level in said activated sensing transistor, and



means for applying the output of said current level sensing means to said means for applying a voltage to said common base.

4,453,195

RELAY PLUG SOCKET

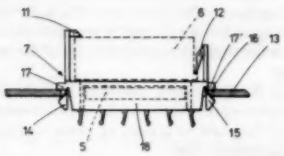
Hans Sauer, Deisenhofen, Del.X; Toyotaka Nishikawa, Ise, Japan, and Johannes Oberndorfer, Hofsingelding, Fed. Rep. of Germany, assignors to SDS Elektro GmbH, Fed. Rep. of Germany and Matsushita Electric Works Ltd., Osaka, Japan

Filed Sep. 25, 1981, Ser. No. 305,891

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036404

Int. Cl.³ H01H *50/04*

U.S. Cl. 361—156 **7 Claims**



1. A relay plug socket, comprising:

(a) means for receiving a relay;

(b) terminal pin means for electrically connecting to an external circuit;

(c) fastening element means for connecting to a mounting base; and

(d) an internal circuit integrated with said plug socket, said internal circuit comprising an energizing circuit for a relay of the bistable type, said energizing circuit being configured to impart a monostable switching function to said bistable relay plugged into said plug socket, said energizing circuit comprising an integrated circuit and a capacitor connected to drive said plug-in relay, said relay and said capacitor being joined at a common electrical junction, the junction between the capacitor and the relay being connected to a terminal pin permitting a bistable relay to be energized in a known armature position.

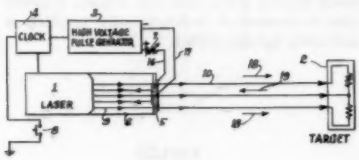
4,453,196
APPARATUS FOR TRANSMITTING ELECTRIC CURRENT BY CONCENTRIC CHANNELS OF IONIZED GAS

Jan E. Herr, 6250½ Stanley Ave., San Diego, Calif. 92115

Continuation of Ser. No. 404,062, Aug. 2, 1982, abandoned, which is a continuation-in-part of Ser. No. 233,515, Feb. 11, 1981, abandoned. This application Apr. 25, 1983, Ser. No. 488,191

Int. Cl.³ F41F 5/00

U.S. Cl. 361—232 4 Claims



1. An apparatus for applying an electrical current to a distant target via channels of conductive gas which comprises:

means for generating laser beams of sufficient energy to ionize a column of ambient gas between the apparatus and the target;

a voltage generator;

a reflecting mirror having an aperture therethrough interposed in the path of said column, the incident profile which the mirror exposes to the laser beam being lesser than the cross-sectional area of the beam;

a first electrode connected to one pole of the voltage generator, said electrode being ring-shaped and placed in the path of that outer portion of the beam which extends beyond the outer periphery of the mirror; and

a second electrode connected to the other pole of the voltage generator and located in the path of that inner portion of the beam which passes through the aperture of the mirror.

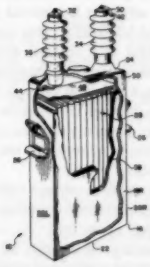
4,453,197
DIELECTRIC FLUID TANK

Lawrence M. Burrage, Milwaukee, Wis., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Oct. 22, 1981, Ser. No. 314,006

Int. Cl.³ H01G 1/02

U.S. Cl. 361—272 11 Claims



1. A tank adapted to confine a dielectric fluid about an electrical component, comprising:

(a) an enclosure defining an opening and having marginal portions whose leading edges form the perimeter of said opening;

(b) a cover having marginal portions whose leading edges are complementary to the opening in said enclosure and disposed in an overlapping relationship with the marginal portions of said enclosure adjacent said opening, the respective leading edges of said marginal portions being disposed in opposite directions over a first part of the perimeter of said opening and disposed in the same direction over the remaining part of the perimeter of said opening; and

(c) pressure sealing edge means for joining together the marginal portions of said cover and said enclosure,

whereby excessive pressure developed within the tank, defined by said cover and said enclosure, forces said cover and enclosure apart and ruptures said edge means along said remaining part of the perimeter of said opening in preference to said first part of the perimeter of said opening.

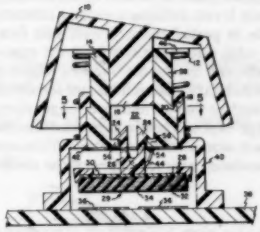
4,453,198
LINEAR FEEL KEYSWITCH WITH HYSTERESIS

Robert D. Bush, Coeur d'Alene, Id., and Dean S. Cowles, Spokane, Wash., assignors to General Instrument Corporation, New York, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,696

Int. Cl.³ H01G 5/16; H01H 3/12

U.S. Cl. 361—288 8 Claims



1. An actuator assembly for use in a keyswitch comprising:

a plunger;

first spring means having a substantially linear spring constant for urging said plunger into a non-actuated position;

a switch actuator extendibly coupled to said plunger; said switch actuator including

second spring means comprising a resilient pad having a non-linear spring constant for providing resilient contact with a switching element when said plunger is moved to an actuated position; and

third spring means having a substantially linear spring constant between said plunger and said switch actuator for urging said switch actuator into an extended position,

said first, second and third spring means cooperating to provide said actuator assembly with a linear force versus displacement characteristic.

4. A linear feel keyswitch assembly with hysteresis for mounting over a switching element on a circuit board comprising:

a housing;

first and second springs having substantially linear spring constants K_1 and K_3 respectively;

a plunger which is spring loaded by said first spring into a first position within said housing;

a switch actuator extendibly mounted to said plunger and spring loaded by said second spring into its fully extended position from said plunger; and

spring means coupled to said switch actuator and having a non-linear spring constant K_2 for providing resilient contact with a switching element when said plunger is moved to an actuated position;

whereby the total spring constant K_T of said linear feel keyswitch assembly satisfies the equation

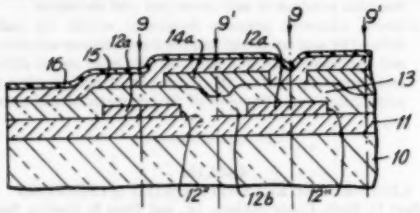
$$K_T = K_1 + K_2K_3/(K_2 + K_3).$$

4,453,199

LOW COST THIN FILM CAPACITOR

Kim Ritchie, Myrtle Beach, S.C., and Jed V. Keller, Phoenix, Ariz., assignors to AVX Corporation, Great Neck, N.Y.

Filed Jun. 17, 1983, Ser. No. 505,177
Int. Cl.³ H01G *1/14, 13/00*; B05D *5/12*
U.S. Cl. 361—306 **9 Claims**



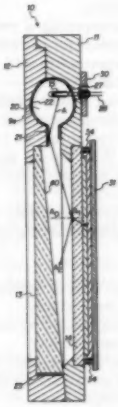
7. An electric capacitor comprising an insulating substrate, a deposited layer of a thin film of conductive material defining a substantially rectangular electrode on said substrate, a vapor deposited layer of dielectric material on said electrode covering the top surface thereof and three edges thereof and exposing one edge, a further deposited conductive thin film layer on said dielectric layer, defining a second substantially rectangular electrode in partial registry with said first electrode and having one edge out of registry with the exposed edge of the first electrode, and having the opposite edge exposed, a deposited layer of dielectric material on said second electrode covering the top surface thereof and three edges thereof leaving said opposite edge exposed and a deposited conductive thin film layer on each side of the capacitors in electrical connection with the associated exposed edges of the electrodes.

4,453,200

APPARATUS FOR LIGHTING A PASSIVE DISPLAY

James S. Trcka, and Robert J. Thorkildson, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 20, 1981, Ser. No. 284,904
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—31 **8 Claims**



1. A front-lighted display system comprising:

a display having a front surface from which visual indications can be viewed;

a transparent light-distributing wedge having a narrow end and a wide end containing a reflective surface thereon, said wedge being spaced from the front surface of the display to form a space between the wedge and display and positioned such that the display can be viewed through said wedge; and

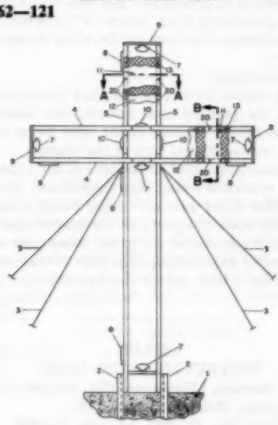
means positioned adjacent the narrow end of said wedge and display and coupled for introducing light into the space between said wedge and display such that a portion of said light in said space is directed upon said wedge and is reflected onto said display, a portion of said light in said space is directed upon said wedge and is internally reflected within the wedge until it exits the wedge and illuminates said display, and a portion of said light in said space directly illuminates said display, whereby the display is illuminated bi-directionally resulting in a more uniformly lighted display.

4,453,201

ELECTRICALLY ILLUMINATED CROSS

Lee W. Prouty, 33 Chapel La., Danville, Ill. 61832

Filed Jun. 17, 1982, Ser. No. 389,396
Int. Cl.³ F21P *1/02*
U.S. Cl. 362—121 **2 Claims**



1. An illuminated cross comprising:

(1) a pair of spaced, adjacent vertical plate members;

(2) a pair of spaced, adjacent horizontal plate members;

said pairs of vertical and horizontal plate members intersecting and mating at horizontal and vertical slots formed therein, respectively, and extending partially therethrough so that with the mating of said slots a t-shaped cross is formed having the front and back surfaces thereof in common vertical planes,

(3) end plate elements covering the spaces between the tops of said vertical plate members and the ends of said horizontal plate members;

(4) support means at the base of said t-shaped cross frame;

(5) sheets of translucent material covering each the front and back of said t-shaped cross; and

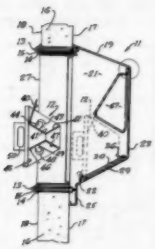
(6) means for illuminating the interior of said t-shaped cross including electric bulbs positioned adjacent the ends of of said pairs of vertical and horizontal plate members and adjacent and below the intersection thereof, including semi-circular notches formed on each the front and back edges of each said vertical and horizontal plate member intermediate the intersention of said plate members, and including convex reflector means positioned on the outside of said plate members between said semi-circular notches.

4,453,202

VANDAL-RESISTANT LIGHT FIXTURE

Earl L. Morris, La Habra Heights; Ron T. Hahn, Fullerton, and Theodore J. Sally, Graton, all of Calif., assignors to Acorn Engineering Company, City of Industry, Calif.

Filed Jan. 5, 1983, Ser. No. 455,750
Int. Cl.³ F21S 1/02
U.S. Cl. 362—147 17 Claims



1. A vandal-resistant security light and housing assembly which is serviceable from outside the room in which it is installed comprising:

a metal housing mounted over an opening in the wall of the room and extending into the room, said wall having an interior surface which faces the room and an exterior surface, said housing having an upwardly facing surface and a downwardly facing surface, said housing being open in the back and the interior thereof being accessible from the back side of the wall on which it is mounted, said housing having a light transmitting area comprising at least one opening formed therethrough and lens means covering said at least one opening, said light transmitting area being located in at least the downwardly facing surface of said housing; and

a reflector, florescent bulb and ballast assembly mounted in said housing adjacent at least one of said light transmitting areas, said reflector florescent bulb and ballast assembly being positioned so that it does not protrude past said exterior surface of said wall and having a socket affixed thereto, said socket having a detachable plug inserted therein, said reflctor, florescent bulb and ballast assembly having quick disconnect means for detachment from the backside of said housing and said reflector and bulb assembly being inaccessible from the room side of the fixture; and

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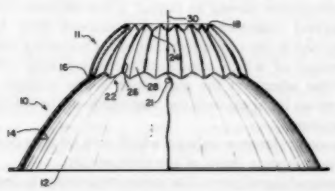
4,453,203

LIGHTING FIXTURE REFLECTOR

James R. Pate, Salem, Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jul. 19, 1982, Ser. No. 399,223
Int. Cl.³ F21V 7/20
U.S. Cl. 362—345 7 Claims



1. A reflector particularly for use with a high energy efficient light source, the reflector being of the type having an open substantially circular end, a central axis and means at the other, smaller end for mounting a light source in an envelope in the reflector so that the source is on said central axis and is closer to the smaller end that to the larger open end, wherein the reflector comprises

a first portion extending from said open end to a location beyond a transverse plane containing the source,

said first portion having means defining a substantially smooth reflective interior surface of revolution which is symmetrical about said central axis,

the transverse dimensions of said first portion decreasing in the direction of said other end; and

a second portion occupying the distance between the smaller end of said first portion and said smaller end of said reflector, said second portion including

means defining a plurality of flutes each having a crest lying along an arc of a great circle of a first sphere centered at said source, a root lying along an arc of a great circle of a second sphere centered at said source and having a larger diameter than said first sphere, and a reflective surface extending between said root and crest,

said plurality of flutes being uniformly distributed about said central axis;

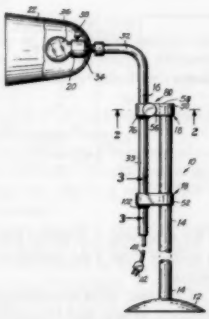
whereby light rays passing from said source toward said second portion are reflected toward said open end and said first portion along paths laterally offset from said source.

4,453,204

SUPPORT ASSEMBLY FOR LAMP SWING ARM

Jerome Warshawsky, 1322 Everitt Pl., Hewlett Harbor, N.Y. 11557

Filed Jun. 13, 1983, Ser. No. 503,411
Int. Cl.³ F21V 21/00
U.S. Cl. 362—396 13 Claims



1. A lamp swing arm support; comprising:

(a) first support housing means;

(b) a first opening extending into said first housing means along a first predetermined axis, and formed to a size and configuration to receive and be mounted to a lamp support post;

(c) a second opening extending through said first housing means along a second predetermined axis, and formed to a size and configuration to receive a lamp swing arm;

(d) a third opening extending into said first housing means along a third predetermined axis proximate said second opening and formed to a size and configuration to receive a clamping actuator;

(e) a clamping ring disposed within said second opening and formed of a size and configuration to slidably receive the lamp swing arm and with a slit to facilitate radial movement of at least a predetermined portion of said clamping ring proximate said slit against the lamp swing arm to clamp same in selected positions;

(f) a clamping actuator movably received within said third opening and having an actuator end movable into engage-

ment with said clamping ring proximate said slit to move said portion of said clamping arm when disposed therewithin to so clamp the lamp swing arm in said selected positions;

(g) second support housing means;

(h) a third opening extending into said second husing means along a third predetermined axis, and formed to a size and configuration to receive and be mounted to a lamp support post;

(i) a fourth opening extending through said second housing means along a fourth predetermined axis, and formed to a size and configuration to receive a lamp swing arm;

(j) a guide ring disposed within said fourth opening and formed of a size and configuration to slidably receive the lamp swing arm and with a slit to facilitate radial movement of at least a predetermined portion of said guide ring against the lamp swing arm; and

(k) said first housing means and said second housing means being formed to be disposed in spaced relationship one with respect to the other when mounted to a lamp support post and when receiving a lamp swing arm.

4,453,205

DC/AC CONVERTER WITH SHUNT REGULATED LOAD

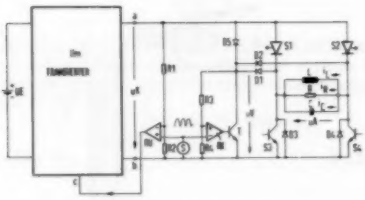
Bogdan Brakus, Puchheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,148

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040556

Int. Cl.³ H02P *13/20*

U.S. Cl. 363—8 **4 Claims**



1. A circuit for supplying a complex load ac consumer with an alternating voltage from a dc voltage source comprising:

a dc/ac converter;

a plurality of current direction-dependent switching elements connected to said load for preventing magnetic and electrical energy stored in capacitive or inductive components of the ac consumer being returned to said dc/ac converter;

an auxiliary load circuit connected in parallel with said ac consumer;

a controlled switching element for switching said auxiliary load circuit into and out of connection with said ac consumer;

a means for deriving a theoretical voltage signal;

a voltage comparator having an output connected to a control electrode of said controlled switching element and having inputs respectively supplied with an actual voltage signal derived from the voltage used by said ac consumer and said theoretical signal,

said comparator comparing the voltages supplied to said inputs and supplying a signal to said control electrode to bring said controlled switching element to a conductive state when the voltage used by said ac consumer exceeds an instantaneous value of said theoretical signal as a result of the release of electrical or magnetic energy stored in said capacitive or inductive components of said ac consumer.

4,453,206

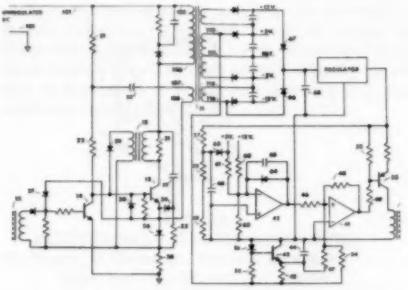
SWITCHING-MODE POWER SUPPLY REGULATOR

William C. Voight, 1970 Harrison St., San Francisco, Calif. 94103

Filed Dec. 14, 1981, Ser. No. 330,616

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **5 Claims**



1. A regulated switching mode power supply of the self-oscillating type wherein energy stored in the primary inductance is transferred to the load during the flyback portion of the cycle and wherein the amount of energy stored and delivered during any given cycle is controlled by means of turning on and off a main power switch in the primary circuit at the correct time so that the delivery of power to the load is also controlled, comprising;

a first transformer having a primary and at least one secondary;

a main power switch for controlling current flow in the primary;

control means for controlling the turn-on and turn-off of the main power switch in response to a command signal;

reference voltage means;

sensing means for sensing the voltage applied to the load;

an error signal amplifier having two inputs, one input connected to the sensing means and the other connected to the reference voltage means, the output of which amplifier is proportional to the difference of potential between in the voltage sensing means and the reference voltage means;

a voltage ramp generator for generating a voltage ramp which is initiated at the time that the main power switch is turned on, the instantaneous amplitude of which ramp is proportional to the volt-seconds per turn impressed on the first transformer by turning the main power switch on, and which ramp is reset to its initial value after the main power switch is turned off and before the next time at which the main power switch is turned on;

a summing network having two inputs and a summing point, the first input of which is connected to the error signal amplifier output the second input of which is connected to the ramp generator;

a comparator having an output, a first reference input and a second unknown input, the unknown input being connected to the summing point of the summing network, the output of which comparator changes state producing a pulse whenever the magnitude of the voltage at the unknown input exceeds the magnitude of the reference input voltage;

a second reference voltage which may be zero connected to the reference input of the comparator;

command signal generator means responsive to the output of the comparator for producing a command signal of the proper sense, said command signal generator means connected to the control means whereby the main power switch is turned off in response to the command signal

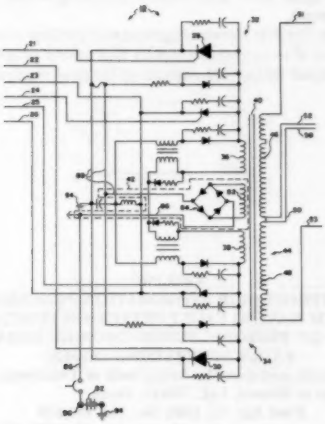
thereby stabilizing the output for given load and line conditions.

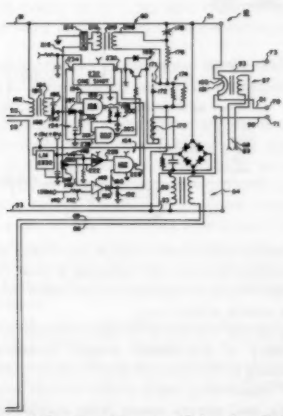
4,453,207

DC TO AC POWER INVERTER

Steven J. Paul, Necedah, Wis., assignor to Best Energy Systems For Tomorrow, Inc., Necedah, Wis.

Filed Mar. 31, 1982, Ser. No. 363,794
Int. Cl.³ H02M 7/515
U.S. Cl. 363—139 **39 Claims**





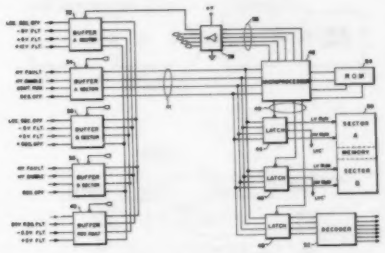
39. In a DC to AC power inverter of the class B,C,D or E type which includes a battery, at least one power SCR and associated capacitor circuitry, at least one input winding on a main transformer core, the input winding requiring a quiescent current to establish operating current for capacitor commutation charge and the transformer core having at least one secondary output winding, the improvement comprising: circuit means including an isolated feedback winding on the main transformer and rectifying means coupled between said feedback winding and the battery for feeding current generated by the quiescent current back to the battery, self-detecting load demand circuit means coupled to a line from said output winding for cyclically energizing the inverter, for sensing a minimum AC load across said secondary winding, and upon sensing a minimum AC load, for holding said inverter in an energized state until less than a minimum AC load is sensed during an energizing cycle; and automatic power factor correction circuitry for supplying full time leading power factor correction to a load, said automatic power factor correction circuitry being sensitive to light reactive loads.

4,453,208

APPARATUS FOR CONTROLLING THE TIME SEQUENCED ENERGIZATION OF A MEMORY UNIT

Michael C. Middleton, and Thomas J. Hernandez, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Mar. 8, 1982, Ser. No. 355,817
Int. Cl.³ G11C 7/00
U.S. Cl. 364—140 **8 Claims**



6. A control apparatus for controlling the energization of a memory unit in accordance with a predetermined sequence in response to input energy regulator signals, said apparatus comprising:

a microprocessor;

a first plurality of input signal lines;

a second plurality of input buffer means, each including a predetermined number of buffer elements, said buffer means being individually selectively enabled by buffer control signals;

means connecting each of said input lines to an associated one of said buffer elements;

said microprocessor having a first group of output port lines connected, respectively, to said buffer means for selectively supplying and applying said buffer control signals to said buffer means;

said microprocessor having a group of input/output port lines corresponding in number to said predetermined number of buffer elements in each of said buffer means;

bus means connecting the output of corresponding ones of said buffer elements of each of said buffer means together and to corresponding ones of said input/output port lines of said microprocessor;

a plurality of latch means, each including a predetermined number of latch elements corresponding in number to said input/output port lines of said microprocessor, said latch means being individually selectively enabled by latch control signals;

said bus means including means connecting the input of corresponding ones of said latch elements of each of said latch means together and to corresponding ones of said input/output port lines of said microprocessor;

said microprocessor having a second group of output port lines connected respectively, to said latch means for selectively supplying and applying said latch control signals to said latch means;

output signal means connected to the output of said latch elements for effecting the control of the energization of said memory unit;

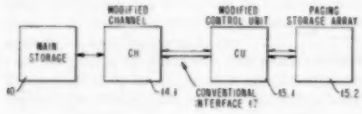
said microprocessor including means to control the application of said buffer control signals to selectively enable said buffer means one at a time, means to receive the input signals from the selected one of said buffer means, means responsive to changes in said input signals to institute

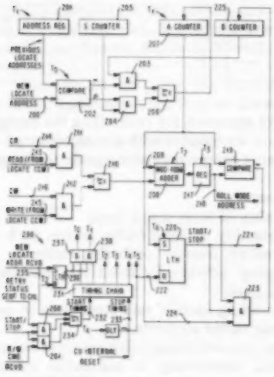
predetermined sequencing and delays in corresponding output signals, and means to control the application of said latch control signals to selectively enable said latch means one at a time.

4,453,209
SYSTEM FOR OPTIMIZING PERFORMANCE OF PAGING STORE

David Meltzer, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,233
Int. Cl.³ G06F *13/00, 13/08*
U.S. Cl. 364—200 **5 Claims**





1. In a data processing system having a CPU, a main storage, a channel attached to said CPU and main storage, a control unit, a general purpose I/O interface bus interconnecting said control unit and said channel, and a storage device having rotational latency attached to said control unit, whereby it is advantageous to transfer data on said bus in roll mode, in which the data transfer is started and concluded at a variably determined position whithin a page block of said device,

wherein said channel and control unit include means for operating under control of a first programmed channel command providing control information to locate a page storage area in said device and to define the direction of a data transfer operation scheduled to be performed subsequently between said page area of said device and a corresponding unfragmented page storage area of said main storage and for operating under control of a second programmed channel command chained to said first command for locating said corresponding unfragmented page storage area in said main storage,

and wherein said channel and control unit include means for controlling the transfer of a multi-byte page block of data between said page area in said device and said corresponding page storage area in main storage, an improvement for speeding up access to said device, comprising:

first means in said control unit responsive to channel signals produced during execution of a said first command for determination in advance of the preparation of an associated second command a minimal latency entry position in a page storage area in said device designated by said channel signals for a data transfer in roll mode;

said determination being conditioned on a constant time factor K associated in part with an estimate of the time required by said channel to retrieve said second command from main storage and conditioned in part by the cycling rate and the rotational position of said storage device device and the direction of said transfer; and

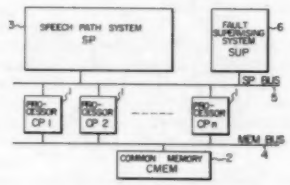
second means for passing a signal from said control unit to said channel representing said entry position in response to a signal from said channel indicating a said second command,

whereby the data transfer begins at said position of minimal latency if said channel executes said second programmed command within said estimate of the time required.

4,453,210
MULTIPROCESSOR INFORMATION PROCESSING SYSTEM HAVING FAULT DETECTION FUNCTION BASED ON PERIODIC SUPERVISION OF UPDATED FAULT SUPERVISING CODES

Taibei Suzuki, and Kensuke Inoue, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1980, Ser. No. 140,619
Claims priority, application Japan, Apr. 17, 1979, 54-46004
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **20 Claims**



1. A multiprocessor information processing system having a fault detection function and including at least three processors being respectively connected to a common bus and sharing a load, the system comprising:

storing means connected to said common bus and having a plurality of addressable storage locations each corresponding to a respective one of said processors for storing fault supervising codes in said storage locations, respectively, said storing means being accessible from each of said processors via said common bus;

updating means for controlling each processor to periodically and sequentially access the corresponding storage location in said storing means and update the code stored in said storage location via said common bus in time with a first timing cycle, respectively;

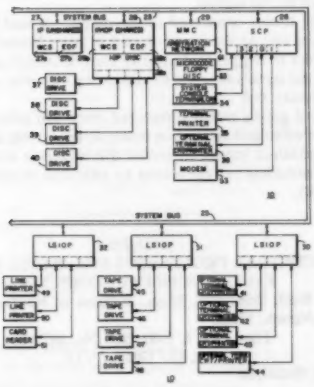
supervising means coupled to said storing means for periodically supervising the update status of said fault supervising codes stored in said storing means in time with a second timing cycle, which is longer than said first timing cycle, to determine the presence of a fault or faults in said processors by detecting no difference between the fault supervising codes in said storing means during a present cycle and a previous cycle of said second timing cycle for a given processor.

4,453,211

SYSTEM BUS FOR AN EMULATED MULTICHANNEL SYSTEM

Martin Askinazi, Dresher, Pa.; Liam McManus, Willingboro, N.J.; Paul R. Malnati, Delran, N.J., and Charles L. Kapeghian, Vincentown, N.J., assignors to Formation, Inc., Mt. Laurel, N.J.

Filed Apr. 28, 1981, Ser. No. 258,514
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—200 22 Claims



1. A single synchronous system bus for a plurality of distributed processors which emulate multiple channels of a multichannel system using multichannel software instructions comprising

(a) means for distributing each channel for the multichannel system directly to all of the distributed processors by way of the single synchronous system bus,

(b) means for granting control of the entire system bus to one of said distributed processors to become the master processor of all the remaining distributed processors,

(c) means for transmitting an address word onto said single synchronous system bus from said master processor directed to each of said remaining distributed processors, said address word containing the address of any emulated channel of said master processor and the address of any one of said remaining distributed processors to become the slave processor,

(d) said slave processor including means for receiving and determining whether the address word on said single synchronous system but contains its respsective address,

(e) said slave processor being coupled to a plurality of peripheral devices,

(f) means for transmitting a data word onto said single synchronous system bus between said master processor and said slave processor,

(g) said master processor including means for relinquishing bus control, and

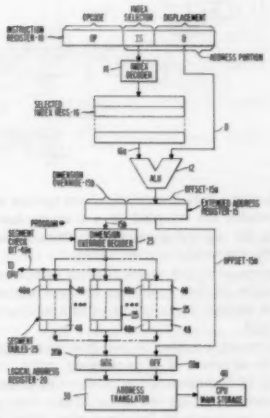
(h) said master processor converting the multichannel software into the address and data word formats of said synchronous system bus, said slave processor having means responsive to said data word (a) for generating control signals to transfer data from at least one of said peripheral devices to said slave processor and (b) for producing an address and data word destined for another distributed processor in accordance with the multichannel software, said slave processor requesting and becoming master processor.

4,453,212

EXTENDED ADDRESS GENERATING APPARATUS AND METHOD

Blaine D. Gaither, Sierra Madre; William W. Farley, IV, Pasadena; Albert Johnson, Altadena, and Brian L. Parker, Pasadena, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 13, 1981, Ser. No. 282,919
Int. Cl.[3] G06F *7/00, 9/00*
U.S. Cl. 364—200 13 Claims



1. In a data processing system having a memory and an address translator, improved apparatus for generating a logical address for use by said translator in accessing said memory, said apparatus comprising:

means for storing data indicative of a logical address, said data including index selection data and displacement data;

a plurality of index registers each including index data;

means responsive to said index selection data for selecting one of said index registers;

an extended address register;

means including an adder for adding the index data in a selected index register to said displacement data and for storing the sum in said extended address register;

a logical address register having first and second portions;

means for storing a predetermined number of the least significant digits of the sum in said extended address register in said first portion of said logical address register;

table storing means for storing a plurality of tables each containing a plurality of address locating entries for a corresponding one of a plurality of programs performable by said system;

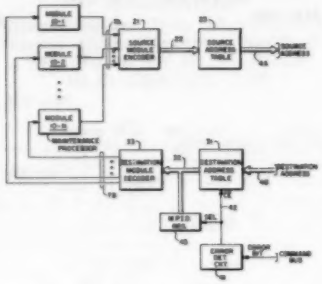
selection means responsive to a program identification signal provided by said system and to a predetermined number of the most significant digits of the sum in said extended address register for accessing a corresponding one of the address locating entries in a selected one of said tables and for storing this accessed entry in said second portion of said logical address register; and

means for applying the contents of the first and second portions of said logical address register to said address translator.

4,453,213
ERROR REPORTING SCHEME

Alfredo A. Romagosa, Ft. Lauderdale, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 30, 1981, Ser. No. 288,504
Int. Cl.³ G06F 11/00
U.S. Cl. 364—200 14 Claims



1. For use in a data communications system wherein a plurality of modules are coupled to a communication bus, an arrangement for reporting an error in the course of a communication between modules comprising:

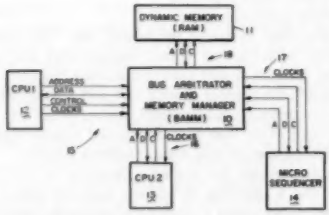
first means, coupled to an address portion of said bus, for normally routing a message to a module whose identification is defined by contents of said address portion of said bus; and

second means, coupled to said first means and responsive to the occurrence of a prescribed error condition in the course of communication between modules, for modifying the normal routing operation of said first means and, in its place, causing said first means to route a message to a preselected one of said modules irrespective of the identity of the module defined by the contents of said address portion of said bus.

4,453,214
BUS ARBITRATING CIRCUIT

Ralph L. Adcock, Irvine, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,965
Int. Cl.³ G06F 9/18, 13/00
U.S. Cl. 364—200 22 Claims



1. In combination,

an information storage means,

a plurality of operating units which selectively and mutually exclusively access said information storage means,

each of said operating units is operative to produce an access signal in order to access said information storage means,

request register means connected to said operating units to receive an access signal when at least one of said operating units requests access to said information storage means,

arbitration means connected to said information storage means and to each of said operating units via said request register means in order to control the selective and mutually exclusive access to said information storage means by said operating units,

said arbitration means includes priority resolution means for selecting only one of said operating units when a plurality of operating units simultaneously produce access signals in an attempt to access said information storage means,

said priority resolution means includes a plurality of bistable circuits each of which is triggered by a separate access signal, and a priority bistable circuit connected to each of said bistable circuits in order to select the output of only one of said bistable circuits thereby to establish priority of said access signals,

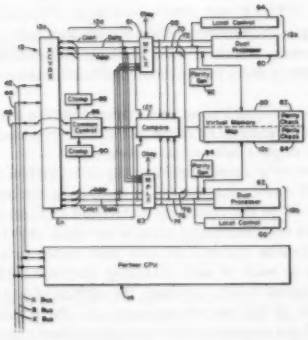
gating means connected to the outputs of said bistable circuits and to the input of said priority bistable circuit in order to trigger said priority bistable circuit as a function of the signals supplied to said gating means by said bistable circuits, and

control gating means connected from said priority bistable circuit to said arbitration means to selectively activate said arbitration means to permit the exclusive access to said information storage means by only one of said operating units.

4,453,215
CENTRAL PROCESSING APPARATUS FOR FAULT-TOLERANT COMPUTING

Robert Reid, Dunstable, Mass., assignor to Stratus Computer, Inc., Natick, Mass.

Filed Oct. 1, 1981, Ser. No. 307,525
Int. Cl.³ G06F 11/16
U.S. Cl. 364—200 21 Claims



1. In central processing apparatus for the programmable processing of digital information including the transfer of digital information with memory apparatus and with peripheral apparatus by way of any of first and second duplicative buses, the improvement comprising

A. first and second programmable digital data processing means, each processing means being arranged for receiving and for producing information-transferring signals and responding identically as the other to identical received signals, and being arranged for applying produced signals to at least one said bus,

B. multiplex means connected with both said processing means for applying information-transferring signals from any one of said first and second buses identically to both said processing means,

C. means for comparing produced signals from said first processing means with those from said second processing means and for producing a fault-reporting signal in response to a selected difference between said compared signals, and

D. means responsive to a fault-reporting signal for disabling

both said processing means from applying signals to either of said first and second buses.

4,453,216

ACCESS CONTROL SYSTEM FOR A CHANNEL BUFFER

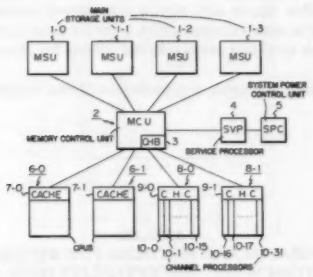
Takashi Chiba, and Satoru Koga, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 14, 1982, Ser. No. 388,195

Claims priority, application Japan, Jun. 15, 1981, 56-91698; Jun. 19, 1981, 56-95679

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **10 Claims**



1. A computer system, comprising:

a plurality of channels each capable of producing an access address and performing data transmission;

at least one main storage unit divided into blocks; and

a memory control unit, operatively connected to said channels, and said main storage unit, for controlling data transmission between said channels, said central processing unit and said main storage unit, said memory control unit including a channel buffer, operatively connected to said channels and said main storage unit, for controlling said main storage unit and said channels, said channel buffer including:

a tag memory portion divided into a plurality of tag blocks of tag lines for storing control information and address information including a main storage block address of a block of said main storage unit, a tag line from each tag block forming a tag set, and each tag set of said tag portion being assigned to one of said channels;

a data memory portion divided into a plurality of dta lines each corresponding to one of said tag lines and each data line assigned to the corresponding said channel;

first access means, operatively connected to said channels and said tag memory portion, for accessing said tag memory portion to select one tag line of each tag block of said tag memory portion;

second access means, operatively connected to said first access means and said data memory portion, for accessing said data memory portion to select one data line thereof;

third access means, operatively connected to said tag and data memory portions, said main storage unit and said channels, for accessing said main storge unit; and

comparator means, operatively connected to said tag memory portion, said first access means and said second access means, for comparing the main storage block address stored in each tag line from each tag block selected by said first access means with the access address produced by said channels for said main storage unit and for generating a matching signal when both addresses match;

access to said data memory portion being carried out by said second access means when said matching signal is generated, and access to said main storage unit being carried out by said third access means when said matching signal is not generated.

4,453,217

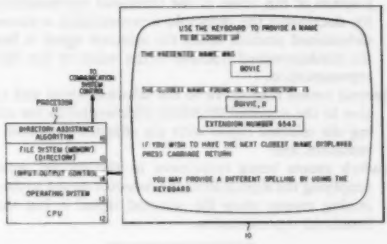
DIRECTORY LOOKUP METHOD AND APPARATUS

Richard H. Boivie, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 4, 1982, Ser. No. 337,093

Int. Cl.³ G06F *15/40*

U.S. Cl. 364—300 **59 Claims**


USE THE KEYBOARD TO PROVIDE A NAME TO BE LOOKED UP
THE PRESENTED NAME WAS
BOVIE
THE CLOSEST NAME FOUND IN THE DIRECTORY IS
BOVIE, R
EXTENSION NUMBER 6543
IF YOU WISH TO HAVE THE NEXT CLOSEST NAME DISPLAYED PRESS CARRIAGE RETURN
YOU MAY PROVIDE A DIFFERENT SPELLING BY USING THE KEYBOARD
TO COMMUNICATION SYSTEM CONTROL
PROCESSOR
DIRECTORY ASSISTANCE ALGORITHM
FILE SYSTEM (MEMORY) (DIRECTORY)
INPUT-OUTPUT CONTROL
OPERATING SYSTEM
CPU

1. A directory lookup method comprising the steps of subdividing a given directory of character strings into at least one subdirectory of character strings having bounds defined by a character of a presented character string, and examining said subdirectory for matches between a particular character of said presented character string and a particular character of said subdirectory character string.

4,453,218

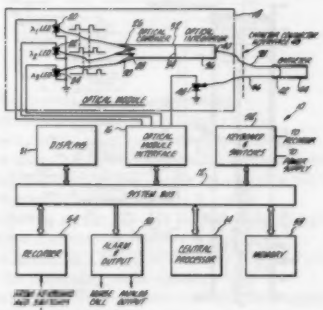
SIGNAL FILTER METHOD AND APPARATUS

Johnie M. Sperinde, San Jose; Stanley D. Goldring, Cupertino, and Dean T. Miller, Portola Valley, all of Calif., assignors to Oximetrix, Inc., Mountain View, Calif.

Filed Nov. 24, 1980, Ser. No. 210,032

Int. Cl.³ H03K *5/20*; A61B *5/04*

U.S. Cl. 364—416 **40 Claims**



17. In an apparatus for determining oxygen saturation of blood comprising

source means for producing electro-magnetic radiation at a plurality of wavelengths,

means adapted to be coupled to the source means for supplying the radiation therefrom to blood under test with incident intensities at the respective wavelengths,

detector means adapted to receive radiation back from the blood under test for producing signals representative of

the intensities of the radiation received thereby at the respective wavelengths, and

determining means responsive to the detector means for receiving the signals therefrom and for determining an output manifestation of oxygen saturation as a function of the signals;

an apparatus for filtering the signals including

first means responsive to a selected one of said signals for generating a threshold representation and for adjusting the value of the threshold representation by increasing the threshold representation a first predetermined amount when the selected signal is greater than a predetermined fraction of the value of the threshold representation and for decreasing the threshold representation a second predetermined amount when the selected signal is less than the predetermined fraction of the value of the threshold representation,

second means responsive to the selected signal and responsive to the adjusted threshold representation for comparing the selected signal with the adjusted threshold representation, and

switch means being responsive to the second means for supplying the signals from the detector means to the determining means when the selected signal is less than the threshold representation.

4,453,219

DIPMETER DISPLACEMENT PROCESSING TECHNIQUE

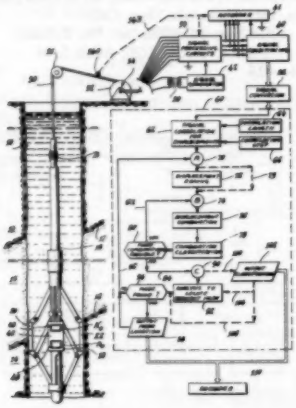
Christian M. Clavier; Vincent R. Hepp, both of Ridgefield, Conn., and Alexis C. Dumestre, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 537,998, Dec. 30, 1974, Pat. No. 4,348,748. This application May 28, 1982, Ser. No. 383,159

The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.

Int. Cl.³ G01V *1/40*

U.S. Cl. 364—422 **18 Claims**



1. A dipmeter well-logging method comprising:

deriving a transducer response log for each of three or more transducer paths which extend along at least a selected interval of a borehole traversing subsurface earth formations and are circumferentially spaced from each other around the borehole wall;

finding for each respective pair of said logs and at each of a succession of respective depth levels in said borehole interval, the depth displacement between a base correlation interval of one of the logs of a pair and a similar interval of the other at which the two intervals best fit each other, thereby typically deriving three or more such depth displacements per depth level, wherein the correlation interval for one depth level substantially overlaps that of the next;

finding zones each comprising respective borehole depth levels the depth displacements at which for at least two pairs of logs are consistent with each other from one depth level to the next within selected criteria for consistency;

using said three or more depth displacements per depth level to derive therefrom two or more possible dips per level, each dip having a respective dip azimuth and dip magnitude, and finding, for each zone, one or more respective clusters of said possible dips, each cluster comprising possible dips which are within a selected range of dip azimuth and dip magnitude;

for each depth level in the borehole, retaining only the possible dip, in any, which is consistent within selected criteria with a cluster which is for the zone including said depth level and meets selected criteria for cluster quality; and

producing a tangible representation of said retained dips.

4,453,220

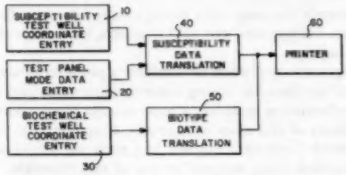
APPARATUS AND METHODS FOR RECORDING ANTIMICROBIC SUSCEPTIBILITY DATA AND BIOTYPE DATA

Philip B. Flegal, 2416 Kathy Way, Calistoga, Calif. 94515; Michael V. Lancaster, 201 Carl Dr., Chapel Hill, N.C. 27514, and William W. Hanney, III, 2425 Janis Way, Calistoga, Calif. 94515

Filed Mar. 2, 1981, Ser. No. 239,441

Int. Cl.³ G06F *15/20*; G01N *33/16*

U.S. Cl. 364—413 **20 Claims**



1. In a system for recording susceptibility data from one of a plurality of microdilution test panel types corresponding to a predetermined one of a plurality of types of microorganisms and having at least a plurality of sets of wells each having a series of prearranged different dilutions of preselected different antimicrobics, which wells have been innoculated with prearranged amounts of an unknown microorganism and incubated to promote microorganism growth, in combination:

first data entry means for manually entering susceptibility data in the form of the coordinates of one of the wells in each of said sets at the breakpoint of microorganism growth based on visual inspection of said wells of said test panel;

second data entry means for entering test mode data corresponding to said test panel type;

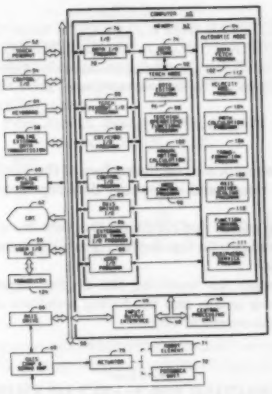
a printer for printing alphanumeric data on a form; and

susceptibility data translation means for translating said entered susceptibility data in terms of said entered mode data into printer drive signals for driving said printer to print on said form a listing of minimum inhibitory concentrations of said antimicrobics for said unknown microorganism.

4,453,221
MANIPULATOR WITH ADAPTIVE VELOCITY CONTROLLED PATH MOTION

Malcolm F. Davis; Charles M. Linser, and Brian J. Resnick, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 13, 1982, Ser. No. 377,925
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—513 **16 Claims**



1. An apparatus for moving a function element in accordance with input signals defining with respect to a first coordinate system positions of a tool centerpoint associated with the function element, the tool centerpoint following a predetermined path between any two positions, and further input signals defining a work process parameter subject to unprogrammed variations, the apparatus comprising:

(a) a manipulator on which the function element is mounted, the manipulator having

(1) a plurality of members describing a plurality of axes of motion, at least some of the members being linked by axes of rotation, the members and axes of motion defining a generalized coordinate system, and

(2) a plurality of actuators, each member having associated therewith at least one actuator for effecting motion of the member,

(b) a manipulator control including a memory for storing input signals defining positions and a servomechanism connected to the actuators to control motion of the members, the control executing the steps of

(1) producing in response to the work process parameter input signal a process parameter signal representing the value of a work process parameter,

(2) producing an increment interval signal representing a period for moving the tool centerpoint through an increment of displacement along the path,

(3) producing, in response to the process parameter signal, a process parameter velocity signal representing the effective velocity of the tool centerpoint during the period,

(4) producing in response to the increment interval signal and the process parameter velocity signal an increment distance signal representing an increment of displacement along the path,

(5) producing end point coordinate signals representing the coordinates with respect to the first coordinate system of an end point of the increment,

(6) producing in response to the end point coordinate signals a set of machine coordinate signals representing coordinate values of the end point with respect to the generalized coordinate system,

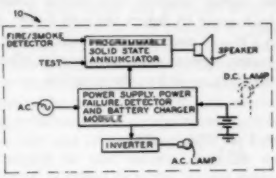
(7) applying the set of machine coordinate signals to the servomechanism to effect coordinated motion of the members to move the tool centerpoint to the position defined by the end point coordinate signals, and

(8) iterating steps (1) through (7) to cause the tool centerpoint to move through a series of increments along the path between the positions defined by the input signals at a velocity determined in accordance with the nonprogrammed variations of the work process parameter.

4,453,222
EMERGENCY DEVICE EMPLOYING PROGRAMMABLE VOCAL WARNING COMMANDS

Kurt A. Goszyk, Washington Crossing, Pa., assignor to Exide Electronics Corporation, Philadelphia, Pa.

Filed Apr. 19, 1982, Ser. No. 369,406
Int. Cl.³ G10L *1/00*; G08B *19/00*
U.S. Cl. 364—513.5 **7 Claims**



1. A verbal warning system, comprising

(a) an alternating-current power supply (T1);

(b) a direct-current standby power supply (30);

(c) means including rectifier means (18) connected with said alternating-current power supply for charging said direct-current standby power supply;

(d) illuminating means (32, 40) continuously energized by said direct-current standby power supply;

(e) means including a speech synthesizer (U3) and a speaker (SP1) for generating audio signals;

(f) normally de-activated means including a programmable microcomputer (U2) for operating said speech synthesizer to produce a plurality of audible phrases, and user operated switch means (SW1) for programming said microcomputer to provide first (1–5) and second (6) sets of audible phrases, respectively;

(g) first means (K1, Q5) for activating said microcomputer means in response to the loss of said alternating-current power supply to produce said first set of audible phrases; and

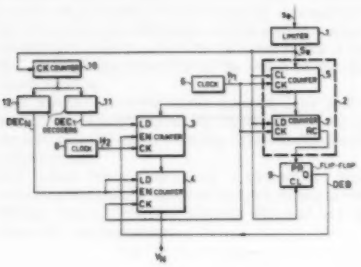
(h) emergency condition means (U5, U6) for activating said microcomputer means in overriding higher priority relation to said first activating means to produce said second set of audible phrases.

4,453,223

DEVICE FOR COMPUTING THE PSEUDO-VARIANCE OF THE INSTANTANEOUS PERIODS OF AN ALTERNATING-CURRENT SIGNAL

Paul Ravel, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 8, 1981, Ser. No. 328,744
Claims priority, application France, Dec. 12, 1980, 80 26411
Int. Cl.³ G01S *15/00*
U.S. Cl. 364—517 **10 Claims**



1. A device for computation of the pseudo-variance

$$\sum_{i=1}^{N-1} |(P_{i+1} - P_i)|$$

of the N instantaneous periods P_i ($1 \leqq i \leqq N-1$) of an alternating-current signal mixed with noise, the device being provided with clipping means for limiting the amplitude of the alternating-current signal, wherein said device comprises detection means which serve to detect the sign of the difference $P_{i+1} - P_i$ ($1 \leqq i \leqq N-1$) and are connected to the output of said clipping means, selective-addition means which serve to add the quantity $2(P_{i+1} - P_i)$ to the quantity

$$P_1 + 2\sum_{j=1}^{i-1} (P_{j+1} - P_j)$$

with $1 \leqq j \leqq i$ and $P_{j+1} > P_j$ when P_{i+1} is greater than P_i and which are connected to the output of said detection means, and subtraction means which serve to subtract the value P_N from the value

$$P_1 + 2\sum_{i=1}^{N-1} (P_{i+1} - P_i)$$

(with $1 \leqq i \leqq N-1$ and $P_{i+1} > P_i$) and which are connected to the output of said selective-addition means, the pseudo-variance to be determined being provided by said subtraction means.

4,453,224

ORBITING OBJECTIVE LENS TELESCOPE SYSTEM AND METHOD

James W. Crooks, Jr., San Diego, Calif., assignor to General Dynamics Electronics Division, San Diego, Calif.

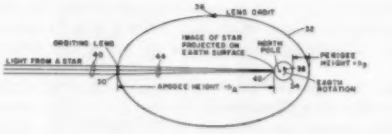
Filed Aug. 19, 1980, Ser. No. 179,426
Int. Cl.³ G06F *15/20*; G02B *23/00*
U.S. Cl. 364—525 **19 Claims**

1. A telescope system for enabling the viewing of astronomical objects surrounding a planet, comprising:

objective lens means for gathering and transmitting radiation from the astronomical objects;

means for placing the objective lens means in a predetermined orbit around the planet;

means for enabling the orbit and orientation of the objective lens means to be altered for focusing radiation from a preselected one of the astronomical objects into an image on the surface of the planet, the orbit of the objective lens means being selected to cause the image to move across the surface of the planet at a predetermined rate;



sensing means located on the surface of the planet for detecting the image and outputting data representative of the image;

processing means for receiving the data from the sensing means and producing display signals representative of the data; and

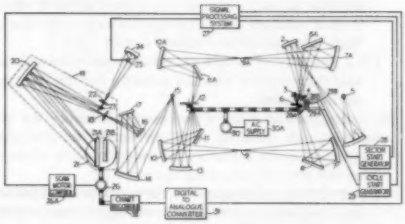
display means for receiving the display signals from the processing means and producing a picture of the preselected astronomical object.

4,453,225

COUNTERACTING THE EFFECT OF PHASE SHIFT CHANGES BETWEEN TWO QUANTITIES IN EXTRACTING THEIR RATIO

Michael A. Ford, Buckinghamshire, England, assignor to Perkin-Elmer Limited, Buckinghamshire, England

Filed Mar. 6, 1981, Ser. No. 241,348
Claims priority, application United Kingdom, Mar. 7, 1980, 8007813
Int. Cl.³ G01J *3/42*
U.S. Cl. 364—525 **21 Claims**



9. Apparatus for producing an electrical output signal expressing the ratio between two quantities, comprising:

(a) a signal generating means for producing a composite electrical signal wherein an elemental portion of a signal component representing one quantity occurs alternately with, and in predetermined timed relation to, an elemental portion of a signal component representing the other quantity, with the result that said composite electrical signal includes two series of elemental portions;

(b) means forming part of said signal generating means for causing the order of occurrence of the elemental portions of one series with respect to the elemental portions of the other series to be periodically reversed so that the elemental portions of one series are alternately leading and lagging the elemental portions of the other series; and

(c) signal processing means responsive to said signal generating means for establishing an elemental numerator signal combination and an elemental denominator signal combination, said elemental numerator signal combination including a pair of elemental portions from one series and

the other said elemental denominator signal combination including a pair from the other series, with the members of each pair producing opposite phase shift variation effects, and for ratioing the said combinations and producing an elemental ratio signal, whereby the effect on the accuracy of said ratio of any phase shift changes introduced by the signal generating means in the elemental portions of both series is substantially cancelled.

4,453,226

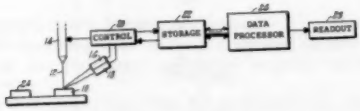
METHOD AND APPARATUS FOR PARTICLE SIZE DETERMINATION IN A HOST MATERIAL

Robert H. Hobbs, Vernon, and Peter R. Solomon, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 15, 1981, Ser. No. 283,599

Int. Cl.³ G01N *27/00*

U.S. Cl. 364—555 **13 Claims**



1. Apparatus for determining the size distribution of particles of a particular composition in a sample of host material comprising:

means for stimulating the emission of X-ray radiation from the elemental constituents of numerous subsamples of said host material sample, said subsamples of said host material each being of substantially the same size and substantially all including at least two of said particles, each said elemental constituent emitting X-rays having a respective characteristic energy level, the magnitude of said emitted X-rays being indicative of the amount of said elemental constituent;

means for sensing said X-rays having energy levels characteristic of at least a respective one of the elemental constituents of said particles of said particular composition for each said subsample and for providing elemental constituent amount signals indicative of the amount of a respective elemental constituent for each said subsample; and

signal processing means responsive to said elemental constituent amount signals for sorting each said elemental constitutent amount signal as a function of the elemental constituent amount it represents and entering a unit count data signal in a respective one of a plurality of data bins each representing a respective elemental constituent amount value range, for summing in each said bin the unit count data signals accumulated in the respective said bin to provide respective sum signals and for fitting a preselected multi-parameter distribution function to the collective sum signals thereby to yield a plurality of parameters which jointly describe the underlying size distribution of said particles in said sample.

4,453,227

METHOD AND APPARATUS FOR TRANSFERRING A BIT PATTERN FIELD INTO A MEMORY

Hugo Amann, Karlsruhe, and Dieter Funke, Waldbronn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 258,010

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016738

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **2 Claims**

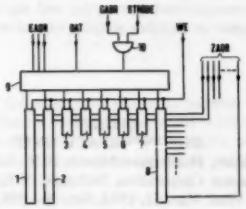
1. A circuit arrangement for transferring and storing a bit pattern field consisting of p columns and z lines comprising:

(a) a memory including p memory building blocks, each having a data input, an input for a write signal and a plurality of inputs for a multidigit line address signal, each memory building block having a memory depth of z lines;

(b) an interim register with p register positions, each capable of storing a bit, preceding said memory, said interim register having a data input, an input for a strobe signal, an input for addressing the p register positions and p data outputs, the data inputs of the p individual memory building blocks connected to the p data outputs of the interim register;

(c) a write line for coupling a write signal to the write signal input of all of said memory building blocks simultaneously, for each line of said bit pattern field; and

(d) an address bus for carrying a multidigit line address signal, for each line of said bit pattern field coupled in parallel to the inputs for a multidigit line address signal of all of said memory building blocks, whereby, the bits of said first line of said bit pattern field can be transferred to said interim register serially with each register position addressed in sequence and thereafter transferred to said



memory building blocks by addressing the first of the z positions therein while at the same time providing said write signal whereafter, for each succeeding line of said bit pattern field only those bits different from a respectively corresponding bit of the content of said interim register occupying the same relative column position are transmitted to respective positions in said interim register occupied by said respectively corresponding bits in the interim register, the remaining bits in said interim register which are not different from a respectively corresponding bit of the current line of bit pattern field for transmission remaining stored in said interim register unchanged whereby further transfers from the interim register to the second and each succeeding line of said memory will take place using a respective said multidigit line address signal and a respective said write signal in a synchronized manner with respect to the formation of respective bit pattern lines in the interim register such that each line of the bit pattern field will successively be transferred to a corresponding line in said memory.

4,453,228

COMPONENT SELECTION SYSTEM FOR A MULTIPLE LINE ADAPTER ORGANIZATION

Richard A. Loskorn, Dana Point, Calif., assignor to Burroughs Corporation, Detroit, Mich.

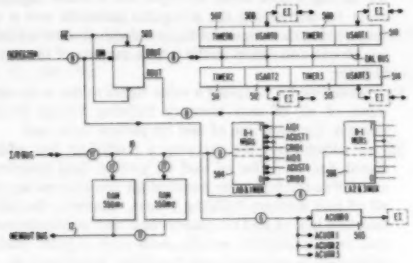
Filed Mar. 30, 1982, Ser. No. 363,592

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **13 Claims**

1. In a line support processor for controlling data transfer operations between a host computer and remote data terminals, wherein said line support processor includes a plurality of line adapters, a data link interface unit with local memory and a microprocessor, said microprocessor including program data in an internal ROM and external RAM storage means and having an I/O bus and output control registers providing control data and information data to said line adapters, a component selection system for a multiple line adapter organization comprising:

(a) a plurality of line adapters, each of which includes its own line adapter memory and a data-comm line to a remote terminal, each of said line adapters being operatively controlled by said microprocessor;



(b) logic means for decoding command signals from said microprocessor and conveying said signals to a specific line adapter in said line adapter organization.

4,453,229

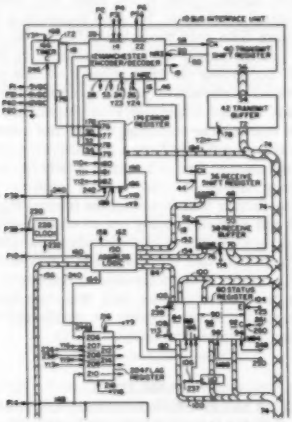
BUS INTERFACE UNIT

Scott H. Schaire, Huntington Manor, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 11, 1982, Ser. No. 356,949

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—900 **33 Claims**



1. In a multiplex data bus interface unit having a Manchester encoder/decoder providing an interface for transmit and receive shift registers to a biphase serial bus, buffer registers providing an interface for the shift registers with an internal parallel bus communicating with a parallel direct memory access data port through a bidirectional buffer, and at least one additional register responsive to the internal bus, the improvement comprising:

means for defining a functional state of the bus interface unit;

means for monitoring a plurality of logical signals characterizing the operational status of the bus interface unit, the monitoring means generating a plurality of control signals regulating a data transfer process between the biphase serial bus and the parallel direct memory access data port.

4,453,230

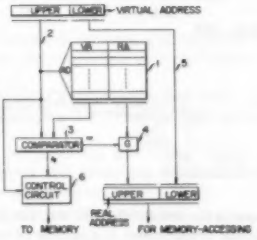
ADDRESS CONVERSION SYSTEM

Tetsuya Mizoguchi; Fumitaka Sato, both of Ome, and Tadanobu Furukatsu, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki and Nippon Electric Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 119,653, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 865,584, Dec. 18, 1977, abandoned. This application Jun. 21, 1982, Ser. No. 390,783

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—900 **3 Claims**



1. An address conversion system comprising:

a first memory for storing a first plurality of virtual-real address pairs stored in a main memory, said first memory including a plurality of register pairs each of which includes a first register for storing a virtual address and a second register for storing a real address corresponding to said virtual address;

a second memory having a plurality of memory locations for storing a second plurality of virtual-real address pairs stored in said main memory, the memory capacity of said second memory being greater than that of said first memory;

a plurality of address comparators coupled to the respective first registers, for comparing said virtual addresses stored in said first registers with a part of virtual addresses to be supplied from a central processing unit;

first searching means for determining if said virtual addresses stored in said first registers coincide with said part of said virtual addresses from said central processing unit by using said address comparators when receiving said part of said virtual addresses from said central processing unit;

addressing means for addressing said memory locations of said second memory in accordance with said part of said virtual addresses from said central processing unit at the same time that said first searching means searches said virtual addresses of said first memory;

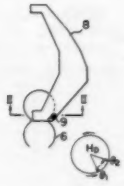
second searching means for, when said address comparators generate signals indicating non-coincidence and said addressing means reads out said virtual-real address pairs from said second memory, writing said virtual-real address pairs of said second memory into the corresponding first and second registers and for determining if said virtual addresses stored in said first registers coincide with said part of said virtual addresses from said central processing unit by using said address comparators; and

main memory access means for accessing virtual-real address pairs stored in said main memory when said address comparators generate signals indicating non-coincidence.

4,453,231
MAGNETIC BUBBLE MEMORY

Naoki Kodama, Hachioji; Ryo Suzuki, Kodaira; Masatoshi Takeshita, Hachioji, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,518
Claims priority, application Japan, Dec. 4, 1981, 56-194520
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 9 Claims



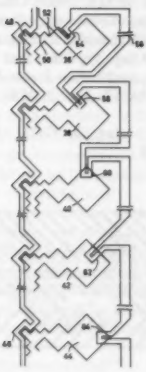
1. A magnetic bubble memory comprising:
a bubble supporting layer made of a material capable of holding and propagating cylindrical magnetic bubble domains;
a first bubble propagation track for propagating the magnetic bubble domains in accordance with a driving magnetic field rotating in a plane of said bubble supporting layer, said first bubble propagation track being formed with an ion-implanted pattern to a surface of said bubble supporting layer; and
a second bubble propagation track connected to said first bubble propagation track for propagating the magnetic bubble domains in accordance with said driving magnetic field, said second bubble propagation track being formed with a plurality of soft magnetic members arranged on said bubble supporting layer;
one of said soft magnetic members of said second bubble propagation track being overlapped on said first bubble propagation track at junction of said first and second bubble propagation tracks.

4,453,232
DEVICE FOR GENERATING MAGNETIC BUBBLES WITH A HIGH BIT RATE

Gerrit J. Koel, and Karel E. Kuijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 336,236, Dec. 31, 1981, abandoned.
This application Sep. 14, 1983, Ser. No. 532,297
Claims priority, application Netherlands, Jan. 19, 1981, 8100216
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—41 13 Claims

1. A device for storing digital information in the form of magnetic bubbles, said device comprising:
a substantially planar magentizable layer capable of supporting magnetic bubbles therein;
at least two drive patterns in the layer, each of said drive patterns comprising a first contiguous disc pattern having substantially a first scale; and
means for generating a magnetic field having at least one component rotating in the plane of the magnetizable layer;
characterized in that:
each drive pattern further comprises a second disc pattern contiguous with the first pattern, said second pattern having a second scale which is at least 1.8 times larger than the first scale, each of said second disc patterns having an edge, the edges of the second disc patterns having at least first and second positions which separately correspond uniquely to preferred bubble positions at different angles of rotation of the rotating magnetic field, rotation of the rotating magnetic field from the first edge position to the second edge position requiring a rotation of less than 360°;
first means for processing magnetic bubbles, said first bubble-processing means being located at the first edge position on one second disc pattern;

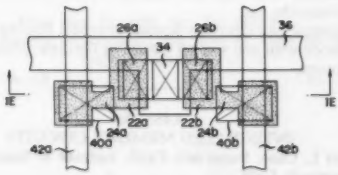


second means for processing magnetic bubbles, said second bubble-processing means being located at the second edge position on the other second disc pattern, said first and second bubble-processing means being activatable only concurrently.

4,453,233
SEMICONDUCTOR MEMORY DEVICE AND METHOD OF MANUFACTURING THE SAME

Satoshi Shinozaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 29, 1982, Ser. No. 344,048
Claims priority, application Japan, Feb. 13, 1981, 56/19926
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—182 3 Claims



1. A semiconductor memory device comprising:
a first semiconductor region of first conductivity type;
a first insulation layer for separating elements formed in said first semiconductor region;
a second semiconductor region of second conductivity type contacting with said first semiconductor region, and formed in an island fashion by said first insulation layer;
a third semiconductor region of first conductivity type provided in said second semiconductor region;
a poly-silicon wiring layer connected to said third semiconductor region and extending over said first insulation layer, said poly-silicon wiring layer containing high concentration impurity of first conductivity and serving as a fuse;
a first insulating film formed on the surface of said poly-silicon wiring layer;
a second insulating film formed on the side face of said poly-silicon wiring layer; and

an electrode connected to said second semiconductor region through a contact hole formed in self-alignment with said second insulating film.

4,453,234

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

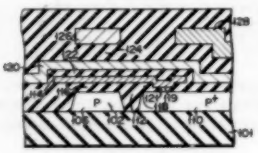
Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 16, 1981, Ser. No. 302,776

Claims priority, application Japan, Sep. 26, 1980, 55-134080; Jun. 3, 1981, 56-84317; Jun. 3, 1981, 56-84318; Jun. 3, 1981, 56-84319

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—185 18 Claims



1. A nonvolatile semiconductor memory device comprising:
a first semiconductor region in which a source region, an active region and a drain region are formed;
a second semiconductor region;
insulator means for spacing apart said first semiconductor region from said second semiconductor region with insulating material;
a first insulating film superposed on said first and second semiconductor regions;
a floating gate electrode superposed over said first and second semiconductor regions with said first insulating film interposed therebetween, said floating gate electrode facing said second semiconductor region with said first insulating film interposed therebetween so that charge may be transferred between said floating gate electrode and said second semiconductor region in order to control an amount of charge in said floating gate electrode;
a second insulating film superposed on said floating gate electrode; and
a control gate electrode formed over said floating gate electrode with said second insulating film interposed therebetween.

4,453,235

INTEGRATED MEMORY CIRCUITS

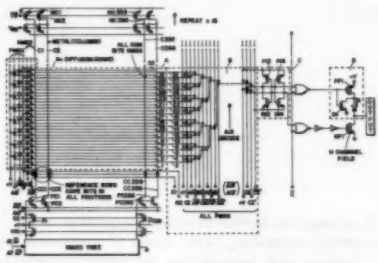
Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 153,316, May 27, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 429,995

Int. Cl.³ G11C *7/00, 8/00*

U.S. Cl. 365—189 1 Claim

1. An integrated circuit memory, comprising:
rows of devices each of a first polarity and each having one of first and second predetermined conductivity levels;
shared bit lines for adjacent pairs of said rows of devices;
a plurality of devices of second polarity complementary to said first polarity, each of said devices coupled to one of said shared bit lines;
at least two rows of reference devices each having said first predetermined conductivity level;
word lines for selecting and activating a single device in each of said rows of devices and in each of said at least two rows of reference devices;
sensing means coupled to one of said rows of devices and responsive to the conductivity level in said device;
reference means coupled between said sensing means and said at least two rows of reference devices for compensating and equalizing the response of said sensing means;
clock means coupled to said plurality of devices for charging said shared bit lines before said sensing means is coupled to one of said rows;
address buffer circuits responsive to address input signals for selecting one of said rows and one of said word lines;
each of said address buffer circuits having means for forming a pulse in response to its address input signals;



common bus means for accepting said pulse coupled to each of said address buffer circuits;
clock generating means coupled to said common bus and responsive to said pulse for generating clock signals; and
output means coupled to said sensing means, said output means comprising a bipolar transistor and a MOS transistor.

4,453,236

MEMORY ARRAY ADDRESSING CIRCUITRY

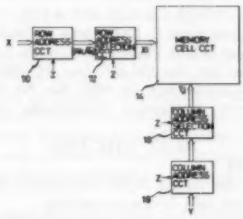
Munehiro Uratani, Kashihara, and Setsufumi Kamuro, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 18, 1980, Ser. No. 141,616

Claims priority, application Japan, Apr. 18, 1979, 54-52207[U]

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—195 4 Claims



1. A system for addressing an M row by N column matrix memory array comprising:
row address selection means for selecting one of said M rows in said matrix memory array corresponding to a point in memory to be addressed;
column address selection means for selecting one of said N columns in said matrix memory array corresponding to the point in memory to be addressed;
said row and column address selection means selecting a point in memory to be addressed in response to application of row and column address signals, the row and column address signals for selecting one of the points in memory being equivalent to the absence of any address signals; and
control signal application means connected to less than the entirety of said M rows or N columns for inhibiting the application of one of said row or column address signals to

said one point in memory when selection of a memory address is undesired to prevent an undesired selection of said one point in memory by the absence of address signals.

4,453,237

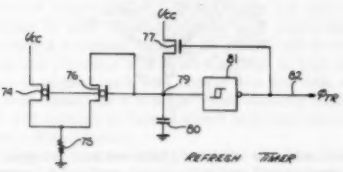
MULTIPLE BIT OUTPUT DYNAMIC RANDOM-ACCESS MEMORY

Edmund A. Reese, Portland; Dieter W. Spaderna, and Stephen T. Flannagan, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 192,740, Oct. 1, 1980, Pat. No. 4,406,013. This application Apr. 11, 1983, Ser. No. 483,772

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—222 **4 Claims**



1. In a metal-oxide-semiconductor (MOS) dynamic memory formed on a substrate requiring refreshing which includes an oscillator formed on said substrate and which does not require substantial substrate area for controlling the frequency of refreshing, an improvement in said oscillator comprising:

a capacitor;

a resistor, the resistance of which varies as a function of temperature;

multiplication means interconnecting said resistor and said capacitor for increasing the effective resistance of said resistor as seen by said capacitor;

said effective resistance and the capacitance of said capacitor having an effective time constant which substantially determines the frequency of said oscillator;

whereby said frequency of refreshing is made dependent on temperature.

4,453,238

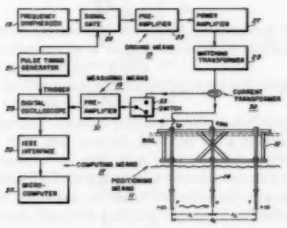
APPARATUS AND METHOD FOR DETERMINING THE PHASE SENSITIVITY OF HYDROPHONES

Arnie L. Van Buren, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1982, Ser. No. 368,793

Int. Cl.³ H04R *29/00*

U.S. Cl. 367—13 **10 Claims**



1. Apparatus for obtaining a frequency calibration of a hydrophone H comprising:

positioning means for positioning the hydrophone H together with a projector P and a reciprocal electroacoustic transducer T along a straight line in a substantially free-field water medium, so that the hydrophone H lies between the projector P and the reciprocal transducer T within their farfields, and the projector P and reciprocal transducer T both face the hydrophone H;

driving means for driving the projector P by one input current i_P at a desired frequency $f=\omega/2\pi$ and for driving the reciprocal transducer T by another input current i_T at the desired frequency $f=\omega/2\pi$;

measuring means for measuring the output voltage e_{PH} of the hydrophone H with the projector P being driven by the input current i_P, for measuring the output voltage e_{PT} of the reciprocal transducer T with the hydrophone removed from the positioning means and the projector P being driven by the input current i_P, for measuring the output voltage e_{TH} of the hydrophone H with the hydrophone in place in the positioning means and the reciprocal transducer T being driven by the input current i_T, and for measuring the input current i_T; and

computing means connected to the measuring means for determining the amplitude and phase angle of the components of the measured output voltages and input current at the desired frequency $f=\omega/2\pi$, and for calculating therefrom the amplitude and phase angle of the receiving sensitivity M_H of the hydrophone H at the desired frequency $f=\omega/2\pi$ by substitution in the expression

$$M_H=[(4\pi e_{PH}e_{TH}d_1d_3)/(j\omega\rho e_{PT}i_Td_2)]^{178}$$

wherein:

$j=\sqrt{-1}$;

ρ=the density of the water medium;

d_1=the distance between the projector P and the hydrophone H;

d_2=the distance between the projector P and the reciprocal transducer T; and

d_3=the distance between the hydrophone H and the reciprocal transducer T.

4,453,239

METHOD AND APPARATUS FOR CONTROLLING THE FOCUSING AND TRACKING OF A LIGHT BEAM USING A MAIN AND SECONDARY LIGHT BEAM IN ASSOCIATION WITH MULTIPLE DETECTORS

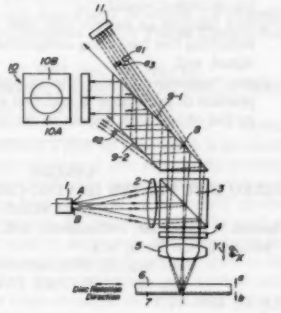
Tohru Musha; Kiichi Kato, and Kenichi Ito, all of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 293,082

Claims priority, application Japan, Aug. 19, 1980, 55-114470

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **10 Claims**



1. A detection apparatus for detecting the correct positioning of a light beam which is modulated to transfer information into a record medium by utilizing an unmodulated light beam having a direction which is different than the direction of the modulated light beam, comprising

means for projecting modulated and unmodulated light beams,

means for focussing said light beams onto a record medium;

means for reflecting said light beams, said reflecting means comprising means defining a surface positioned at the critical angle of reflection for a modulated light ray passing through the optical axis of said focussing means;

first detecting means for receiving primarily modulated light initially reflected from a record medium and subsequently reflected by said reflecting means, said first detecting means being positioned such that a modulated light beam illuminating said surface means will at least in part subsequently illuminate said first detecting means;

second detecting means for receiving primarily unmodulated light, said second detecting means being positioned such that a substantial portion of the unmodulated light reflected from a record medium will illuminate said surface means and at least in part be received by said second detecting means;

means for positioning the modulated and unmodulated light beams;

circuit means for electrically connecting said second detecting means to said positioning means, said circuit means comprising filter means for removing the low frequency component from the electrical signal transmitted by said second detecting means prior to being received by said positioning means;

whereby the influence of low frequency variations of the initial intensity of the unmodulated light beam before reflection and low frequency variations developed by changes in refractive index of a recording medium will not influence the signal received by said positioning means.

8. An apparatus for detecting the correct positioning of a light beam illuminating an object with respect to a predetermined position on said object comprising:

means for directing first and second light beams onto an object at different angles of inclination with respect to one another such that said first light beam illuminates the object and said second light beam illuminates the object at a predetermined position with respect to said first light beam and both said first and second light beams are reflected from the object;

means defining a surface positioned at a critical angle with respect to said reflected first and second light beams such that said reflected first light beam is substantially reflected by said surface and said reflected second light beam is substantially transmitted by said surface to separate said reflected first and second light beams from one another;

means for detecting a substantial portion of the reflected second light beam transmitted by said surface and providing an output signal;

means coupled to receive and filter said output signal for removing low frequency components to produce a filtered signal; and

means responsive to said filtered signal for controlling the position of projection of said first and second light beams on the object with respect to the predetermined position.

4,453,240

VIDEO DISC PLAYER HAVING CADDY OVERTRAVEL MECHANISM

Thomas F. Kirschner, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

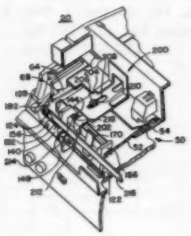
Filed Sep. 27, 1983, Ser. No. 536,091

Int. Cl.³ G11B *17/04, 25/04, 5/82*

U.S. Cl. 369—77.2 **5 Claims**

1. In a disc record player for use with a record caddy consisting of an outer jacket and an inner record retaining spine; said player having a record extraction mechanism including a pair of spaced apart spine latching members for capturing said spine during insertion of said caddy into said player along a path so that said spine and an associated record remain inside said player when said jacket is withdrawn; improvement comprising:

(A) a lever slidably mounted in said player for cooperation with, but independent of, one of said spine latching members for motion between a retracted position and an advanced position; said slidably mounted lever having an abutment portion disposed in said caddy insertion path for engagement with said caddy during insertion thereof into said player for motion therewith toward said advanced position; said slidably mounted lever having a further



portion which is interposed between said one spine latching member and said spine during said caddy insertion to preclude said one spine latching member from capturing said spine until the other of said spine latching members is also ready to capture said spine; and

(B) a member rigidly coupling said spine latching members together to prevent the other latching member from capturing said spine until both spine latching members are in position to capture said spine to assure simultaneous latching of said spine to said player.

4,453,241

OPTICAL SCANNING UNIT FOR READING INFORMATION FROM AN OPTICAL RECORDING

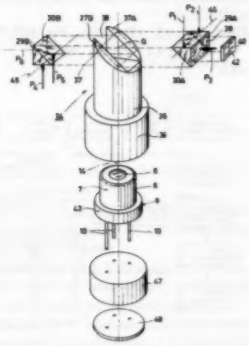
Johannes T. A. van de Veerdonk, and Antonius A. M. van Alem, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,875

Claims priority, application Netherlands, Oct. 8, 1981, 8104589

Int. Cl.³ G11B *7/00;* **G02B** *7/18*

U.S. Cl. 369—112 **11 Claims**



6. An optical scanning unit for scanning recording tracks of a reflecting optical record carrier, said unit comprising:

a tubular member having a first and a second end and a lateral opening formed therein,

a radiation source arranged near said first end for emitting an

unmodulated primary radiation beam towards said second end along a beam axis,

a lens system having an optical axis and arranged near said second end for concentrating said radiation beam into a radiation spot so that when the tracks are scanned by said spot, the radiation is modulated by the recording tracks and the modulated radiation is reflected back through said lens system and along said optical axis,

a double prism arranged in said tubular member adjacent said lateral opening, said double prism having a first and second prism attached to each other and a splitting surface disposed at an angle of 45° to said optical axis for deflecting the reflected radiation in a lateral direction through said lateral opening in said tubular member,

a radiation-sensitive means arranged externally of said tubular member in the path of the reflected radiation for converting the modulated, reflected radiation into a corresponding electrical signal, and

means for supporting said double prism and said radiation source in said tubular member, said supporting means including a support member on which said double prism and said radiation source are mounted so that said beam axis is aligned with said optical axis and said source is spaced axially by a predetermined distance from a point on said splitting surface at which said beam axis intersects said splitting surface,

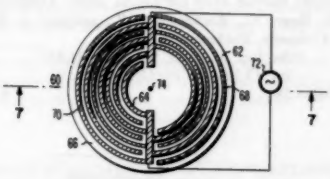
said support member being rotatable and axially movable relative to said tubular member so as to enable the position of said splitting surface to be adjusted during assembly such that said reflected radiation is converged by said lens system into a desired spot on said radiation-sensitive means, whereupon said support member is fixed relative to said tubular member at the position at which said reflected radiation is converged into said desired spot.

4,453,242

SURFACE ACOUSTIC WAVE CUTTERHEAD FOR DISC RECORDING HAVING A CIRCULAR TRANSDUCER

Minoru Toda, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 13, 1982, Ser. No. 397,892
Int. Cl.³ G11B *3/00*; H04R *17/04*
U.S. Cl. 369—132 **19 Claims**



9. In a record system for recording information in the form of surface variations in a record medium, a surface acoustic wave device comprising:

a support having a surface for supporting the propagation of surface acoustic waves;

first and second regions on said surface defining areas including first and second portions of a surface acoustic wave transducer, said first and second regions having peripheries including an inner circular arc of a first predetermined diameter, an outer circular arc of a second predetermined diameter and two segments of radii extending from said inner circular arc to said outer circular arc, said radii having an origin at the center of said inner circular arc and a central angle formed therebetween of a predetermined magnitude;

said first and second portions of said surface acoustic wave transducer including arcuate electrodes, said arcuate electrodes being coupled to a signal source and being provided for launching surface acoustic waves on said surface of said support, and

a stylus joining said surface of said support;

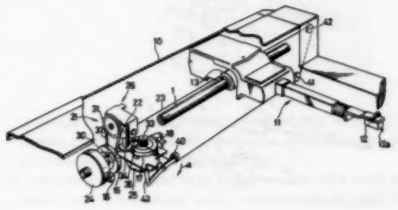
said arcuate electrodes being formed on said surface of said support such that surface acoustic waves launched therefrom converge substantially to a point on said surface of said support, said stylus joining said surface proximate to said joint.

4,453,243

LINEAR TRACKING ARM DRIVE APPARATUS

Naoki Tanaka, Kanagawa, and Masatake Sasaki, Funabashi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 11, 1982, Ser. No. 377,131
Claims priority, application Japan, May 20, 1981, 56-76116
Int. Cl.³ G11B *3/38*
U.S. Cl. 369—221 **10 Claims**



1. A record disc player comprising a pick-up arm; means mounting said arm for movement to and fro along a rectilinear path; drive means for driving said arm along said path; first and second alternatively operated motors; and drive speed change-over means for selectively transmitting driving torques from said first and second motors to said drive means, said drive speed change-over means including a rotatable sun gear operatively connected with said first motor, an internal gear coaxial with said sun gear and operatively connected with said drive means, rotatable planetary gears disposed between, and meshing with said sun gear and internal gear, and a rotary body coaxial with said sun gear and internal gear and rotatably carrying said planetary gears, said rotary body being operatively connected with said second motor.

4,453,244

RECORD PLAYER WITH SPRING-ASSISTED PICK-UP ARM RETURN

Michel Beugin, Flers, and Jean-Pierre Marriere, La Chapelle Biche, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,616
Claims priority, application France, Mar. 20, 1981, 81 05630
Int. Cl.³ G11B *17/06*
U.S. Cl. 369—225 **7 Claims**

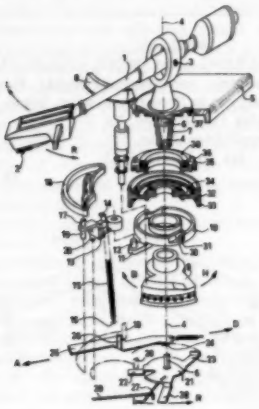
1. A record player having a pick-up arm which is pivotable about a vertical axis and a horizontal axis; a vertically movable arm support; and means for moving the arm from a rest position towards and away from a record by horizontal pivotal movement, and lowering onto the record or lifting by vertical movement of said arm support, said means including a cam for lifting and lowering the arm support; a member coupled to the pick-up arm for rotation therewith about said vertical axis, comprising at least one finger arranged such that movement of the finger rotates the member about the vertical axis; and an arm-return spring which is tensioned when the arm is lowered onto the record, energy stored in the spring being used to lift and return the arm to its rest position,

characterized in that said means comprises:

a toggle lever to which the arm-return spring is attached,

tension force of said spring being transmitted through said lever for lifting and returning the arm; said toggle lever being pivotable about an axis, disposed with respect to said spring such that a lever dead-center position is defined, and

means for moving the toggle lever in response to movement of the cam during lowering of the arm onto a record,



arranged such that the toggle lever is moved from a rest position in which the lever is free of engagement with said finger past dead center, and the spring force then rotates the lever to a loaded position in which a part of said lever is disposed in a position to engage said finger thereby enabling a further movement of the lever to rotate the member and return the arm toward the rest position.

4,453,245

APPARATUS FOR DETECTING POSITION OF A REPRODUCING TRANSDUCER IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

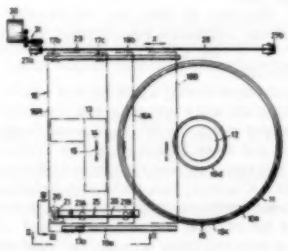
Hiroyuki Sugiyama, Isehara; Masaki Sakurai, Yokohama; Ryuzo Abe, Yokohama; Yasuhiro Yusa, Fujisawa, and Kenji Yoshihara, Chiba, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 28, 1981, Ser. No. 287,822

Claims priority, application Japan, Jul. 29, 1980, 55-107288[U]

Int. Cl.³ G11B *3/08, 3/38*

U.S. Cl. 369—230 **5 Claims**



1. An apparatus for detecting the position of a reproducing transducer in a reproducing apparatus which reproduces an information signal recorded on a rotary recording medium, the reproducing transducer being transferred in the radial direction across said rotary recording medium, said apparatus for detecting the position of a reproducing transducer comprising:

single photo-detection means having a light-emitting element and a light-receiving element which are transferred unitarily with said reproducing transducer;

light interrupting plate means located at a fixed part of said rotary recording medium reproducing apparatus, for operating together with said photo-detection means, said light interrupting plate means having a configuration to change its state between a light interrupting state and a non-interrupting state with respect to said photo-detection means, as said reproducing transducer passes positions corresponding to an outermost peripheral position and an innermost peripheral position of a recorded region on said rotary recording medium; and

position detection signal producing circuit means for producing a position detection output signal responsive to an output of said photo-detection means, to indicate that said reproducing transducer has passed positions corresponding to the outermost peripheral position and the innermost peripheral position of the recorded region on said rotary recording medium,

said light interrupting plate means being a unitary structure for continuously assuming its light interrupting state at first and second end parts thereof respectively corresponding to said outermost and innermost peripheral positions on said rotary recording medium and for assuming its non-interrupting state at positions between said first and second end parts thereof, said first end part of said light interrupting plate extending away from said rotary recording medium, said second end part of said light interrupting plate extending toward said rotary recording medium,

said reproducing transducer having a reproducing stylus which is lowered during a reproducing mode of said reproducing apparatus to make a sliding contact with said rotary recording medium and to reproduce the recorded information signal from said rotary recording medium, said reproducing stylus being lowered responsive to the output of said photo-detection means only while said light-receiving element receives the light emitted from said light-emitting element.

4,453,246

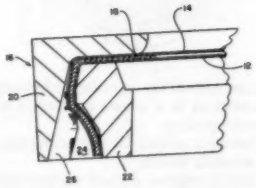
RETAINING RINGS FOR OPTICAL DISC ASSEMBLIES

Covington, Roger G., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,853

Int. Cl.³ G01D *15/32*; G11B *5/82*

U.S. Cl. 369—284 **9 Claims**



1. An optical disc assembly comprising:

a flexible, disc-shaped support carrying a record layer, said support having an information storage region and first and second annular portions radially outward of said storage region, said first annular portion having a smaller radius than said second annular portion;

an annular retaining ring engaging said support, said retaining ring comprising inner and outer ring members;

a radially outward facing surface on said inner ring member;

an annular recess on said inner ring member axial of and adjacent to said radially outward facing surface;

means on said outer ring member cooperative with said inner ring member for clamping said support therebetween in circumferentially-symmetric tension, with said first annular peripheral support portion wrapped about said outward facing surface of said inner ring member and said second annular peripheral support portion pushed into said annular recess; and

means on said retaining ring for causing said second annular peripheral support portion to form a scalloped configuration within said recess.

4,453,247

SPEECH PACKET SWITCHING METHOD AND DEVICE

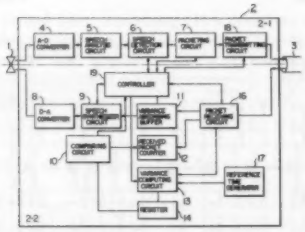
Michio Suzuki, Sagamihara; Matsuaki Terada, Machida; Takao Kato, and Ryuichi Toki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,182

Claims priority, application Japan, Mar. 27, 1981, 56-43914

Int. Cl.³ H04J *6/00*

U.S. Cl. 370—94 **2 Claims**



2. A speech packet switching system comprising:

receiving means for receiving speech packets transmitted via a speech packet switching network;

a variance absorbing buffer for temporarily storing therein the speech packets received by said receiving means;

reproducing means for reproducing the speech packets read out from said variance absorbing buffer;

computing means for calculating a variance of transmission delay times of the speech packets in a talkspurt period received by said receiving means and calculating a size of said variance absorbing buffer corresponding to said variance; and

means for dynamically changing the size of said variance absorbing buffer for the next talkspurt period based on the size determined by said computing means.

4,453,248

FAULT ALIGNMENT EXCLUSION METHOD TO PREVENT REALIGNMENT OF PREVIOUSLY PAIRED MEMORY DEFECTS

Philip M. Ryan, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1982, Ser. No. 388,833

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—11 **7 Claims**

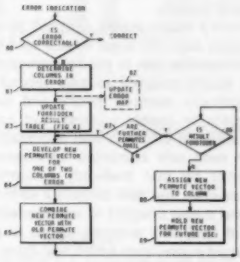
1. In a memory system which employs permute vectors for each column of the memory array to selectively rearrange within the columns the logical order of individual memory chips so as to permit a pair of chips containing defective bit positions at the same address to be relatively repositioned so that said same address contains only one defective bit position, a method for generating a new permute vector for one of said columns, said method being characterized by:

(1) generating a result vector by combining the two initial permute vectors associated with the two columns containing chips having defects which contributed to the unexpected uncorrectable error, said result vector representing a constant relationship between the permute vectors assigned to said two columns when said chips are aligned in the same row of said matrix;

(2) storing said result vector with paired column identification data;

(3) developing a new permute vector for one of said two columns to rearrange the order of said chips in said one column;

(4) combining said new permute vector with the current



permute vector of each said other column which is listed in said table as paired with said one column to produce a new result vector for each said pair;

(5) comparing each said new result vector with each stored result vector associated with correspondingly paired columns and, depending on the result of said comparison:

(a) returning to step 3; or

(b) assigning said new permute vector to said column for future use in said memory system.

4,453,249

SYSTEM FOR BINARY DATA TRANSMISSION

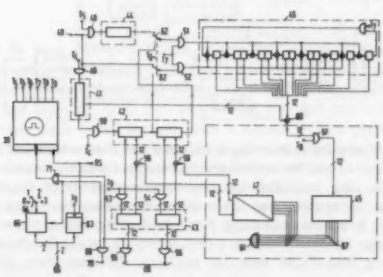
Dieter Roth, Pforzheim; Herbert Schorb, Karlsruhe, and Herbert Kloss, Wörth, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 9, 1982, Ser. No. 347,135

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104762

Int. Cl.³ H04L *1/10*; G06F *11/10*

U.S. Cl. 371—37 **20 Claims**



1. A system for binary data transmission comprising:

an encoder including

a first k/2-stage shift register means to convert an input binary signal to be transmitted into n-bit code words of a quasi-cyclic code with k information bits, where n and k are different integers greater than one; and

a decoder having an error-detection and error-correction arrangement including

a second k/2-stage shift register means having an input receiving said n-bit code words of said quasi-cyclic

code to calculate from each of said code words a syndrome whose value is used as an address of a location in a read-only memory means having a predetermined number of locations, said read-only memory means delivering from said address location a selected one of first information specifying the position of an erroneous bit in said information bits and second information terminating a correction,

a code converter means coupled to said read-only memory means to convert said first information into a k-bit error pattern,

modulo-2 adder means coupled to said code converter means and said input to add said error pattern to said information bits to produce corrected information bits,

first means coupled to said second shift register, said read-only memory means and said modulo-2 adder means to enable locating and correcting a selected number of errors in said information bits by operating on each new corrected information bits as produced above by said read-only memory means, said code converter and said modulo-2 adder means, and

second means coupled to said modulo-2 adder means and said read-only memory means to provide a corrected output signal from which said input binary signal can be derived in response to a selected one of said second information and said corrected information bits after said selected number of errors hav been corrected.

4,453,250

PCM SIGNAL PROCESSING APPARATUS

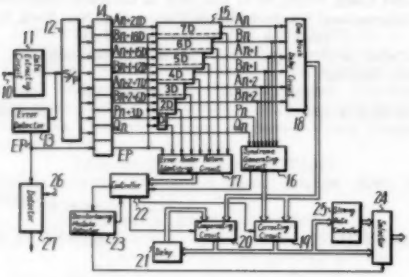
Susumu Hoshimi, Yokohama, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Sony Corporation and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan

Filed Nov. 25, 1981, Ser. No. 324,815

Claims priority, application Japan, Nov. 28, 1980, 55-168751

Int. Cl.³ G06F *11/10*; G11B *5/00*

U.S. Cl. 371—40 **9 Claims**



1. Means for correcting errors in PCM data which has been encoded as interleaved binary data words for two channels and which also includes error-correction and error-detection words, comprising, an error detecting means receiving said PCM data and indicating from said error-detection words whether an error exists in a data format, a means for de-interleaving said PCM data by applying different time delays thereto to produce said binary data words, and said error-correction words and to identify any binary data words in which errors exist, a syndrome signal generating circuit receiving the output of said de-interleaving means to produce error syndrome signals from said binary data words and said error correction words, an error-correcting circuit receiving the outputs of said syndrome signal generating circuit and said means for de-interleaving said PCM data and correcting binary data words in error by using the correct binary data words and the error correction words, a controller, an error signal pattern identifying circuit connected to said controller and receiving an input from said de-interleaving means, an error compensating circuit receiving output of said means for de-interleaving and said controller, and a selector means receiving the outputs of said compensating circuit and said correcting circuit.

4,453,251

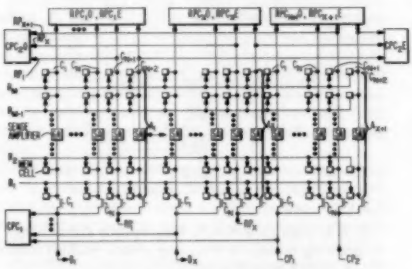
ERROR-CORRECTING MEMORY WITH LOW STORAGE OVERHEAD AND FAST CORRECTION MECHANISM

Fazil I. Osman, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 13, 1981, Ser. No. 310,461

Int. Cl.³ G06F *11/10*; G11C *29/00*

U.S. Cl. 371—51 **9 Claims**



1. A high-speed low-overhead error-correcting memory comprising:

a plurality of data arrays of memory cells, said cells in each data array being arranged in M rows and N columns, with M and N being positive integers;

an additional memory cell in every row of each of said data arrays for storing a parity bit computed from the N data bits of the corresponding row;

a parity array of memory cells arranged in M rows and N columns for storing a parity bit at each row-column pair computed from the data bits in all of said data arrays at the corresponding row-column pair;

reading means coupled to all of said data arrays and said parity array for reading in parallel in a single cycle every memory cell in a selectable row of all of said data arrays and said parity array;

a plurality of first checking means corresponding in number to said plurality of data arrays, each of said first checking means being coupled to check parity on all of the bits read from said selectable row in a respective one of said data arrays;

a second checking means coupled to a selectable column of all of said data arrays and said parity array for checking parity of the bits therein as read by said reading means, said second checking means and said plurality of first checking means all operating simultaneously;

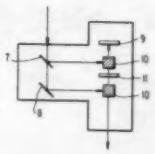
means for concatenating the bits as read by said reading means from said selectable column of all of said data arrays to form a data word; and

means for inverting the kth bit of said data word if the first checking means for the kth data array and the second checking means both indicate an error.

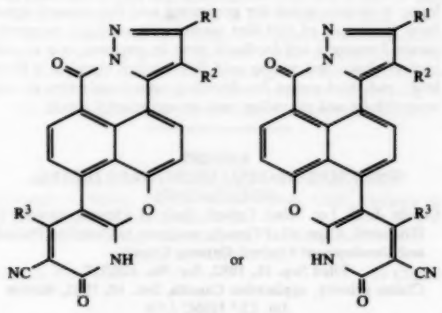
4,453,252
DYE LASER

Takashi Arisawa; Yoichiro Maruyama, both of Ibaraki; Seiichi Imahori, Kanagawa; Masaharu Kaneko, and Hitohsi Ono, both of Kanagawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Apr. 14, 1982, Ser. No. 368,471
Claims priority, application Japan, Apr. 14, 1981, 56-56067
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—53 **1 Claim**



1. A dye laser comprising (1) a container retaining a dye solution for laser and (2) an energy source for pumping connected to said container, said dye solution containing a pyrazoloazaxanthenoisoquinolinone dye represented by the formula:



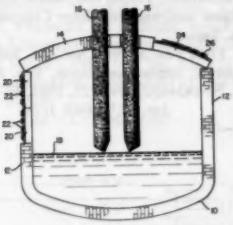
wherein R^1 represents a hydrogen atom, an alkyl group, a trifluoromethyl group, an alkoxycarbonyl group, an alkoxycarbonylalkyl group, an aralkyl group or a phenyl group, R^2 represents an optionally substituted alkoxycarbonyl group, a cyclohexyloxycarbonyl group, a tetrahydrofurfuryloxycarbonyl group, an aryloxycarbonyl group, a benzyloxycarbonyl group, an acyl group, a cyano group or an optionally substituted carbamoyl group, and R^3 represents a lower alkyl group.

4,453,253
ELECTRIC ARC FURNACE COMPONENT

Anthony T. Lauria, and Louis J. Voisinet, both of Berea, Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 10, 1981, Ser. No. 272,786
Int. Cl.³ F27D *1/12*
U.S. Cl. 373—74 **21 Claims**

1. A fluid-cooled graphite block suitable for use as part of the wall or roof of an electric arc furnace which comprises an appropriately shaped block of graphite having in intimate contact with its outer surface a removably fastened fluid-

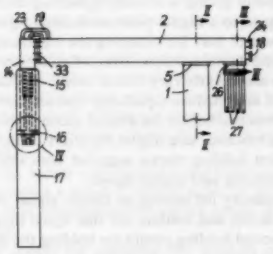


cooled cooling plate having integral conduits for circulating cooling fluid.

4,453,254
HIGH CURRENT CONDUIT SYSTEM FOR ELECTRICAL FURNACES

Joachim Ehle, and Alfred Wagner, both of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,675
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111485
Int. Cl.³ H05B *7/10*
U.S. Cl. 373—93 **15 Claims**

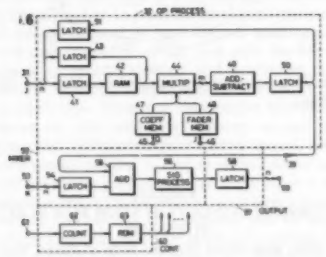


1. A high current conduit system for electrical furnaces comprising: at least one essentially horizontal, liquid cooled electrode supporting arm having a downwardly extending vertical member, with said supporting arm and said vertical member each being formed with a closed hollow-profile; a guide column which is disposed outside of the furnace housing and on which said supporting arm is supported; an electrode having approximately the same cross section as said vertical member; an electrode nipple with an external conical thread extending from one end of said electrode; and means for exchangeably fastening said electrode via said electrode nipple to the lower end of said vertical member, said means for exchangeably fastening including a; connecting member having a conical interior thread which engages said thread of said electrode nipple at one end thereof and a coaxial, outwardly tapering conical bore at its other end, and clamping means, disposed within said vertical member, for releaseably engaging said connecting member to fasten said electrode to said vertical member and press said one end of said electrode against a lower annular outer surface of said vertical member, said clamping means including a spreading cone means which extends into said conical bore for engaging said connecting member to fasten same to said vertical member.

4,453,255
CHARACTERISTIC CONTROL SYSTEM FOR A DIGITAL EQUALIZER

Yoshiyuki Tsuchikane, Tokyo, and Masao Kasuga, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 3, 1982, Ser. No. 345,459
Claims priority, application Japan, Feb. 5, 1981, 56-14938; Feb. 5, 1981, 56-14344[U]; Feb. 27, 1981, 56-27844
Int. Cl.³ H04B 3/14
U.S. Cl. 375—14 4 Claims



1. A characteristic control system for a digital equalizer comprising:

a digital equalizer constructed from a digital filter, for directly giving a desired equalizing characteristic with respect to a digital pulse-modulated signal; and

a control part for changing the equalizing characteristic of said digital equalizer from a first arbitrary characteristic to a second arbitrary characteristic so that one or a plurality of intermediate equalizing characteristics are successively obtained before the desired second arbitrary characteristic is reached, said digital equalizer comprising:

a first holding circuit supplied with said digital signal, for holding said digital signal;

a memory for storing an output signal of said first holding circuit, and reading out this signal thus stored;

a second holding circuit for holding the signal read out from said memory, to feed this signal back to an input of said memory;

a coefficient memory for storing coefficients which are in accordance with predetermined equalizing characteristics;

a multiplier for multiplying signals respectively read out from said memory and said coefficient memory;

an adding and subtracting circuit for successively adding and subtracting output signals from said multiplier;

a third holding circuit for holding an output signal of said adding and subtracting circuit;

a fourth holding circuit for holding an output signal of said third holding circuit, to feed this signal back to the input of said memory through said first holding circuit;

an output part for obtaining an output digital signal of a predetermined number of bits from said third holding circuit; and

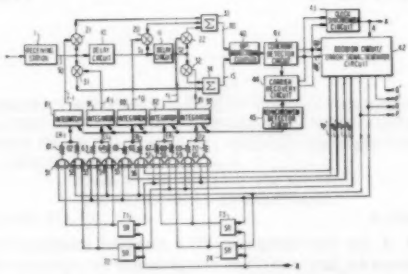
a timing part for generating and applying a predetermined timing pulse to said first through fourth holding circuits, said memory, said coefficient memory, said multiplier, said adding and subtracting circuit, and the like,

said output part producing a digital signal obtained by subjecting the input digital signal of said first holding circuit to direct characteristic equalization.

4,453,256
ADAPTIVE EQUALIZER SYSTEM FOR QUADRATURE AMPLITUDE MODULATION

Toshihiko Ryu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,503
Claims priority, application Japan, Dec. 26, 1980, 55-185609
Int. Cl.³ H04B 3/18
U.S. Cl. 375—15 7 Claims

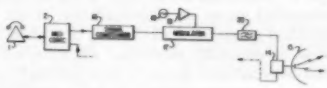


1. An adaptive equalizer system having a control loop comprising; first means for equalizing a modulated carrier wave in response to a first control signal; second means including analogue integrator means for generating said first control signal from the output of said first means, said analogue integrator means forming a self-feedback loop in response to a second control signal and setting said first control signal at a fixed level; and third means for detecting asynchronization in said control loop and providing said second control signal.

4,453,257
SPECTRUM SHAPING MICROWAVE DIGITAL MODULATORS

Gerald J. P. Lo; Misel Cuhaci, both of Ottawa, and N. S. Hitchcock, Carp, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Sep. 21, 1982, Ser. No. 420,717
Claims priority, application Canada, Jun. 10, 1982, 404854
Int. Cl.³ H03C 1/06
U.S. Cl. 375—60 12 Claims



8. A linear phase modulator comprising means for limiting the R.F. bandwidth of a digital phase modulated signal which is to be transmitted, a phase modulator means including means for directly modulating a carrier signal at maximum power level, and means for translating the bandwidth limited baseband signal and applying the translated signal to the modulator for modulation of the carrier signal, the translating means having a transfer function which is the inverse of the non-linear phase switching characteristic of the modulator.

4,453,258
AUTOMATIC GAIN CONTROL CIRCUIT

Donald C. Richardson, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 2, 1981, Ser. No. 268,513
Int. Cl.³ H03H 17/00
U.S. Cl. 375—98 9 Claims

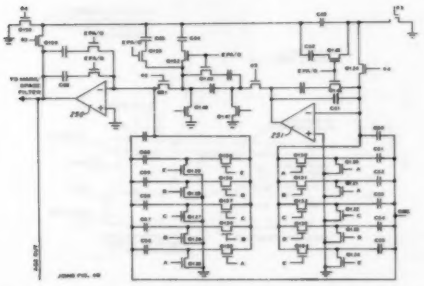
1. An integrated automatic gain control circuit for maintain-

ing an alternating input signal at a predetermined amplitude, comprising:

(a) switchable gain impedance means for receiving the input signal;

(b) switched capacitor filter means incorporating the switchable gain impedance means, for providing a filtered output signal;

(c) output signal comparison means for receiving and comparing the filtered output signal with the predetermined



amplitude and for providing an UP signal if the filtered output signal is too small, and a DOWN signal if the filtered output signal is too large; and

(d) switchable gain adjusting means receptive to the UP and DOWN signals connected to the switchable gain impedance means, for increasing or decreasing the impedance to increase the gain of the filter means in response to the UP signal if the filtered output signal is too small, and to decrease the gain of the filter means in response to a DOWN signal if the filtered output signal is too large.

4,453,259

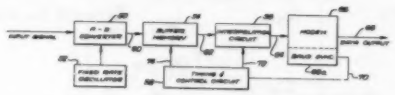
DIGITAL SYNCHRONIZATION TECHNIQUE

Chauncey S. Miller, Rancho Palos Verdes, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 20, 1982, Ser. No. 370,016

Int. Cl.³ H04L *7/02*

U.S. Cl. 375—106 **18 Claims**



1. For use with a data communications receiving-end modem, digital synchronization apparatus, comprising:

sampling means, for sampling at a fixed sampling rate a data signal that was transmitted at a baud rate not necessarily in synchronism with the sampling rate;

buffer means, for temporarily storing signal samples derived from said sampling means;

interpolation means, coupled to said buffer means, for providing to the modem an interpolated sequence of signal samples effectively synchronized with the data signal baud rate;

baud synchronization detection means, for detecting whether the interpolated sequence of signal samples supplied to the modem is in synchronism with the baud rate; and

timing and control means, for controlling operation of said buffer means and said interpolation means in response to signals from said baud synchronization detection means, to maintain the interpolated sequence of signal samples substantially in synchronism with the baud rate.

4,453,260

SYNCHRONIZING CIRCUIT FOR DETECTING AND INTERPOLATING SYNC SIGNALS CONTAINED IN DIGITAL SIGNAL

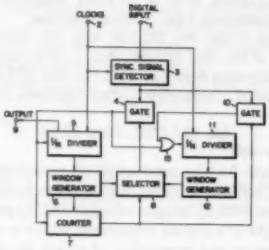
Jun Inagawa, Yokohama; Masahide Nagumo, Kawasaki, and Tadashi Kojima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 27, 1982, Ser. No. 423,725

Claims priority, application Japan, Jun. 15, 1982, 57-102829; Jun. 15, 1982, 57-102838

Int. Cl.³ H04J *3/06*

U.S. Cl. 375—116 **2 Claims**



2. A synchronizing circuit comprising:

frame sync signal detecting circuit means connected to receive clock pulses and a digital input signal having a plurality of frames each consisting of N bits and having a frame sync signal for detecting the frame sync signal to produce a sync detect output signal;

first counting means counting the clock pulses and connected to receive an output signal of said frame sync signal detecting circuit means for producing an output signal synchronized with the output signal of said sync signal detecting circuit means, said first counting means being so arranged to be cleared by the output signal of said sync signal detecting circuit means and to provide an output signal each time N clock pulses are counted even if said sync signal detecting circuit means fails to detect the frame sync signal;

window generating means responsive to said first counting means for generating a window output signal at intervals at which said sync signal detecting circuit means detects the sync signals;

second counting means for counting the window output signal of said window generating means, said second counting means being cleared by each output signal of said sync signal detecting circuit means when said first counting means is synchronized with said sync signal detecting circuit means, and having its output state changed from a first state to a second state when said second counting means counts a given number of window output signals of said first window generating means when said sync signal detecting circuit means fails to detect the sync signals;

a first gate circuit connected between said sync signal detecting circuit means and said first counting means for, when enabled, supplying an output signal of said sync signal detecting circuit means to said first counting means to clear said first counting means;

a second gate circuit connected between said sync signal detecting circuit means and said second counting means, said second gate circuit being enabled by the window output signal of said window generating means to apply an output signal of said sync signal detecting circuit means to said second counting means to clear said second counting means; and

means responsive to said second counting means to supply the window output signal of said window generating means to said first gate circuit when said second counting

means is in said first output state to enable said first gate circuit each time the window output signal is produced, and to enable said first gate circuit until said second counting means is cleared when said second counting means is in said second output state.

4,453,261

MANUFACTURE OF AQUEOUS POLYMER DISPERSIONS AND COATING COMPOSITIONS DERIVED FROM THEM

Frederick A. Waite, Farnham Common, and Julian A. Waters, Goring-on-Thames, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 242,569, Mar. 11, 1981, which is a continuation of Ser. No. 102,269, Dec. 7, 1979, abandoned. This application May 12, 1982, Ser. No. 377,548

Claims priority, application United Kingdom, Jun. 18, 1979, 7921091

Int. Cl.³ C08L *9/04, 33/00*

U.S. Cl. 524—458 **11 Claims**

1. A process for the production of a sterically stabilised dispersion of polymer particles in an aqueous medium comprising (a) at least 30% by weight of water and (b) not more than 70% by weight of a second constituent which is miscible with water, the nature and proportion of which are such that the mixture as a whole is capable of dissolving the monomer or monomers being polymerised to the extent of at least 3% by weight but is a non-solvent for the polymer formed, the process comprising the free radical-initiated polymerisation in the aqueous medium of one or more ethylenically unsaturated monomers at a temperature which is at least 10° C. higher than the glass transition temperature of the polymer which is formed, in the presence in the aqueous medium of a pre-formed amphipathic block or graft copolymer which contains in the molecule a polymeric component of molecular weight at least 500 which is solvatable by the aqueous medium and another polymeric component which is not solvatable by the aqueous medium and which is capable of becoming associated with the polymer particles formed, the concentration of free monomer in the polymerisation mixture being maintained throughout the process at a level such that at no time does the free monomer form a separate phase and the total amount of monomer polymerised being such that the resulting dispersion contains at least 20% by weight of polymer.

4,453,262

X-RAY LITHOGRAPHY APPARATUS AND METHOD OF USE

William D. Buckley, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation of Ser. No. 92,875, Nov. 11, 1979, Pat. No. 4,342,917, which is a division of Ser. No. 869,541, Jan. 16, 1978, Pat. No. 4,215,192. This application May 24, 1982, Ser. No. 381,614

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ B05D *3/06*

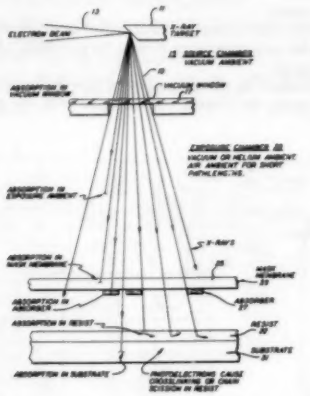
U.S. Cl. 378—034 **6 Claims**

1. Apparatus for performing X-Ray lithography by exposing a coated substrate to X-Ray radiation comprising:

(a) means for disposing an X-Ray apparatus having a target means capable of generating M-line X-Ray radiation having a wavelength in the range of between about 4 and about 14 angstroms so as to generate radiation which will impinge on and expose said coated substrate;

(b) means for operating said X-Ray source so as to generate the M-line radiation;

(c) means for disposing a mask between said source and said substrate; and



(d) means for exposing to said radiation a resist on said coated substrate on which the lithography is to be carried out.

4,453,263

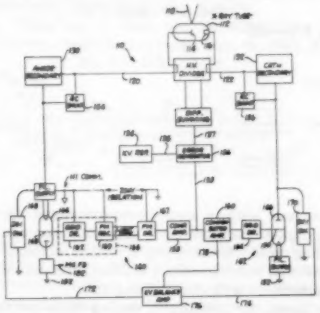
CONSTANT POTENTIAL H-V GENERATOR

Theodore A. Resnick; Walter A. Dupuis, both of Cleveland Heights, and Anthony Palermo, Jr., South Euclid, all of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Continuation of Ser. No. 81,779, Oct. 4, 1979, abandoned. This application Dec. 30, 1981, Ser. No. 335,591

Int. Cl.³ H05G *1/32*

U.S. Cl. 378—112 **18 Claims**



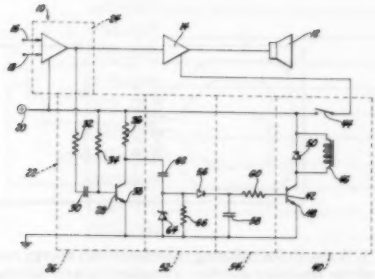
1. A high voltage generator couplable to a source of alternating voltage comprising rectification means connected to said source for providing a pulsating DC accelerating voltage; a reference circuit for comparing the pulsating accelerator voltage magnitude with a reference signal and producing an error signal; a dynamic control circuit including a saturable control element responsive to the error signal for modifying the pulsating accelerator voltage for transmission to an x-ray tube electrode, and balancing circuitry comprising means for sensing the voltage across said saturable control element and for maintaining the control element in a non-saturated operating range.

4,453,264

AMPLIFIER POWER SUPPLY CONTROLLED BY AUDIO SIGNAL

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Filed Sep. 23, 1982, Ser. No. 422,261
Int. Cl.³ H04B 3/00
U.S. Cl. 381—110 19 Claims



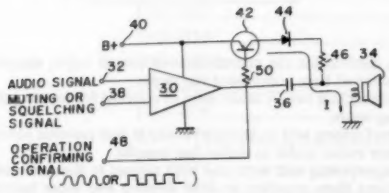
1. A method of supplying power from a constantly available power source (20) to an audio amplifier means for an acoustic transducer (12) amplifier means of the type utilizing first and second input leads (16, 18) having a difference in potential responsive to an audio siganl, said method comprising the steps of producing a control signal by sensing (24) the existence of an audio signal by determining the difference in potential between the input leads (16, 18), and closing a power circuit (44) in response to the control signal to allow power from the power source (20) to power the audio amplifier means (14) so that the audio amplifier means does not receive power in the absence of an audio signal being sent to the audio amplifier means, and generating (24) a ground reference signal from the differential input leads (16, 18) and amplifying (26) the ground referenced signal to produce the control signal.

4,453,265

SPEAKER DRIVING CIRCUIT

Masao Nakano, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,312
Int. Cl.³ H03F 21/00
U.S. Cl. 381—120 4 Claims



1. A speaker driving circuit comprising:
(i) a speaker with a voice coil;
(ii) an audio amplifier receiving an audio input signal and having an output connected to said voice coil to drive said speaker;
(iii) means for rendering said audio amplifier inactive;
(iv) a power supply;
(v) a plurality of manual controls; and
(vi) circuit means for causing said speaker to emit a sound in response to operation of any one of said manual controls, and comprising switching circuit means coupled in circuit with said power supply and said voice coil for selectively providing intermittent current from said power supply to said voice coil independently of the operation of said audio amplifier, whereby said speaker generates a sound in response to said intermittent current; wherein said switching circuit means comprises a switching mode transistor having a collector-emitter junction coupled in circuit with said power supply and said voice coil and a base electrode coupled to receive a control signal for intermittently turning on said transistor; said control signal being produced in response to operation of any of said manual controls.

4,453,266

METHOD AND APPARATUS FOR MEASURING MEAN CELL VOLUME OF RED BLOOD CELLS

James W. Bacus, Hinsdale, Ill., assignor to Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.

Filed Apr. 21, 1980, Ser. No. 142,124
Int. Cl.³ G06K 9/00
U.S. Cl. 382—6 25 Claims

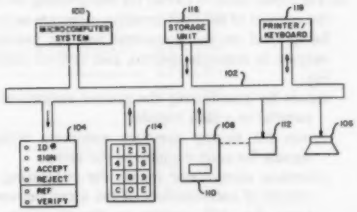
11. A method of determining the mean cell volume of red blood cells of a particular subpopulation from a blood specimen with automated equipment having means for examining red blood cells, comprising the steps of:
examining a plurality of red blood cells in the blood specimen with said means for examining red blood cells,
classifying individual red blood cells by multiple respective features including shape and central pallor into a plurality of subpopulations; and
determining the mean cell volume for a given subpopulation of red blood cells.

4,453,267

SIGNAL COMPRESSION APPARATUS AND METHOD

Bruno J. Paganini, Centerville, Ohio; Jeram G. Advani, Miami, Fla.; Robert M. Whitely, and William J. Hale, both of Dayton, Ohio, assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 21,851, Mar. 19, 1979, Pat. No. 4,308,522.
This application Jun. 8, 1981, Ser. No. 271,713
Int. Cl.³ G06K 9/00
U.S. Cl. 382—29 4 Claims



1. A method of providing a compressed digitized representation of an analog signal comprising the steps of
A. sampling the analog signal at a predetermined rate to provide a plurality of corresponding digital values and associated sample values;
B. storing each digital value in a first location until the digital value corresponding to the next sample has been determined;

C. comparing digital values to determine slope directions and zero value intervals of the analog signal;

D. discarding each non-zero preceding digital value so long as the latest slope direction is the same as the preceding slope direction;

E. storing a preceding digital value and associated sample value in a second location following each slope change and commencement and termination of a zero value interval of the analog signal;

whereby a compressed digitized representation of the analog signal is provided in the second storage location.

4,453,268

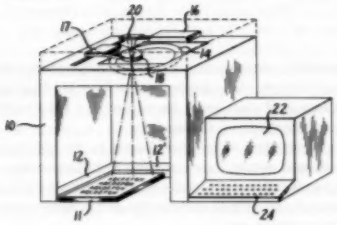
OCR PAGE READER

Ronald H. Britt, Charlotte, N.C., assignor to Lundy Electronics & Systems, Inc., Glen Head, N.Y.

Filed Mar. 18, 1981, Ser. No. 245,093

Int. Cl.³ G06K *9/38*

U.S. Cl. 382—50 **5 Claims**



1. An optical character recognition page reader for reading documents containing characters and for producing an output identifying the characters read, comprising:

means for receiving and illuminating at least one document to be read;

an array of light-sensitive elements for converting variations in light patterns on the document due to the characters into variations in an electrical output signal;

a lens positioned between the document and the array for focusing an image of a portion of a document onto the array;

lens moving means for moving the lens so that all portions of the document are sequentially focused on the array; and

an electronic control circuit for recognizing the variations in the outputs of the light sensitive elements as the characters being read on the document and for producing digital outputs in response thereto, said control circuit comprising:

means for transferring the present outputs of elements in parallel to a shift register;

means for storing previous maximum white reference signals for each element of the array;

reference comparator means for comparing the present output of each element of the array delivered in series from the shift register to the pertaining previously stored maximum white reference signal delivered in series from the means for storing, said comparator means producing an output whenever the present output of the element is larger than the pertaining previously stored maximum white reference signal; and

means for incrementally increasing the value of the previously stored maximum white reference signal whenever the reference comparator means has an output.

4,453,269

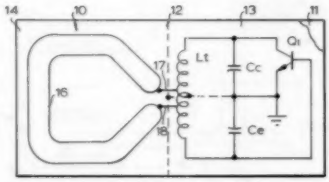
APPARATUS FOR IMPROVING THE FREQUENCY STABILITY OF A TRANSMITTER OSCILLATOR CIRCUIT

Robert C. Skar, Glen Ellyn, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Sep. 22, 1982, Ser. No. 421,285

Int. Cl.³ H04B *1/04*

U.S. Cl. 455—129 **10 Claims**



1. A circuit for radiating radio frequency energy comprising, a planar insulating member, a conductive layer attached to one planar surface of said insulating member to cover a portion of its area, a radio frequency oscillator attached to the second planar surface of said insulating member over said conductive layer, and a radiating loop coupled to said oscillator and attached to said second planar surface of said insulating member over the portion of said one planar surface of said insulating member not covered by said conductive layer.

4,453,270

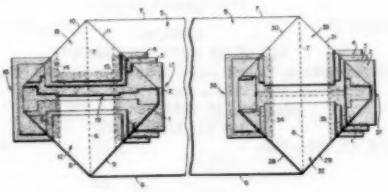
PASTED VALVE STEPPED END BAG

Jack R. Doaini, and Jonathon Tomshack, both of Wellsburg, W. Va., assignors to Westvaco Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,754

Int. Cl.³ B65D *30/26*

U.S. Cl. 383—115 **16 Claims**



1. A method for the manufacture of pasted valve, stepped end multiwall bags comprising the steps:

(a) assembling two or more webs of material for forming the bag walls;

(b) perforating said webs transversely in step patterns across their entire width to define bag lengths;

(c) superposing said webs one with respect to the other and gluing them together to form stepped end tubes having two ends, opposed sides and opposed corners at each end;

(d) separating said stepped end tubes from one another;

(e) scoring the ends of each tube to form opposed diamond shaped infolded panels at each corner and overlapping flaps along each side thereof;

(f) providing an extension for each infolded panel along at least one end of the tube;

(g) folding the opposed infolded panels at each corner of the tube so that the extensions along at least one end of the tube overlap one another; and,

(h) folding and gluing the overlapping flaps at each side of the tube to provide a bag with a completely sealed bottom at the end of the tube where the infolded flap extensions overlap and a valve opening at the other end.

DESIGN PATENTS

GRANTED JUN. 5, 1984

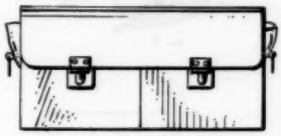
ERRATA

For CLASS	See PATENT NO.
D20–027	274,099
D34–002	274,146
D32–052	274,147
D32–048	274,148
D32–022	274,149
D32–018	274,150
D30–043	274,151
D30–004	274,152
D28–013	274,153
D28–064	274,154
D27–048	274,155
D26–139	274,156
D25–056	274,157
D25–022	274,158
D24–099	274,159
D24–034	274,160
D24–026	274,161
D24–026	274,162
D23–070	274,163
D23–061	274,164
D21–134	274,165
D23–058	274,166
D23–052	274,167
D23–036	274,168
D22–023	274,169
D22–007	274,170
D21–198	274,171
D21–198	274,172
D21–191	274,173
D21–134	274,174
D21–132	274,175
D21–082	274,176
D18–019	274,177
D18–012	274,178
D18–007	274,179
D18–006	274,180
D16–112	274,181
D15–199	274,182
D15–139	274,183
D15–138	274,184
D15–126	274,185
D15–122	274,186
D15–011	274,187
D14–113	274,188
D14–084	274,189
D14–080	274,190
D14–073	274,191
D14–073	274,192
D14–071	274,193

274,099
IDENTIFICATION BADGE HOLDER WITH SINGLE POCKET
Dana C. Belser, P.O. Box 2306, Rockville, Md. 20852
Filed Mar. 5, 1982, Ser. No. 355,047
Term of patent 14 years
U.S. Cl. D20—27

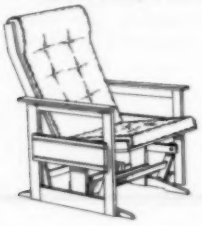
274,100
COMPARTMENTED HIKING STICK
Hoyt W. Axton, Tahoe City, Calif., assignor to Sierra Survival Company, Inc., Ada, Okla.
Filed Jun. 15, 1981, Ser. No. 274,061
Term of patent 14 years
U.S. Cl. D3—7

274,101
SEPARABLE HANDBAG
Sylvia Silk, 1641 3rd Ave., New York, N.Y. 10028
Filed Mar. 30, 1981, Ser. No. 249,217
Term of patent 14 years
U.S. Cl. D3—52

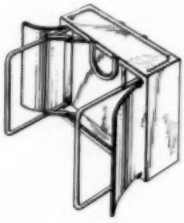


274,102
LECTERN
Chi H. You, 3, Alley 23, Shang Tien La., Hsin Hsing Rd., Ta Li Hsiang, Taichung Hsien, Taiwan
Filed Nov. 6, 1981, Ser. No. 318,977
Term of patent 14 years
U.S. Cl. D6—29

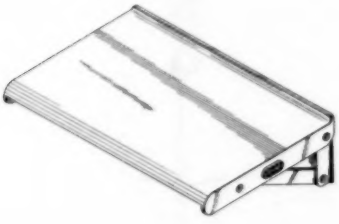
274,103
CHAIR
Roger Delisle, St-Hyacinthe, Canada, assignor to Dutailier Inc., St-Pie de Bagot, Canada
Filed Apr. 28, 1982, Ser. No. 372,477
Term of patent 14 years
U.S. Cl. D6—50



274,104
COMBINED FOLDING SEAT AND SHOPPING BAG
Marcia B. Bockus, 1036 Park Ave., New York, N.Y. 10028
Filed Oct. 29, 1981, Ser. No. 286,179
Term of patent 14 years
U.S. Cl. D6—64

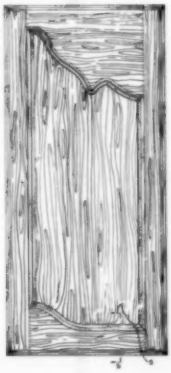


274,105
WALL TABLE
Anthony Brescia, Liverpool, and Ross Deacon, Syracuse, both of N.Y., assignors to Syroco Inc., Syracuse, N.Y.
Filed Mar. 5, 1982, Ser. No. 355,256
Term of patent 14 years
U.S. Cl. D6—114

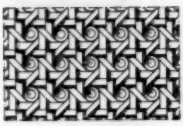


274,106
DOUBLE DRESSER
Eugene E. Wood, Memphis, Tenn., assignor to Memphis Furniture Manufacturing Co., Memphis, Tenn.
Filed Dec. 21, 1981, Ser. No. 333,035
Term of patent 14 years
U.S. Cl. D6—154

274,107
DESIGN FOR A WOOD CABINET DOOR
Joe G. Gordon, 1206 E. First, Wichita, Kans. 67214
Filed Feb. 22, 1982, Ser. No. 351,125
Term of patent 14 years
U.S. Cl. D6—192



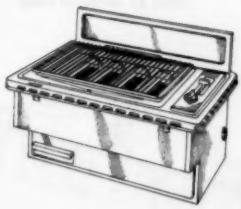
274,108
SEAT CUSHION
Herbert H. Trotman, and Helen H. Trotman, both of P.O. Box 807, Virginia Beach, Va. 23451
Filed Nov. 19, 1979, Ser. No. 94,340
Term of patent 14 years
U.S. Cl. D6—201



274,109
FOOD-SUPPORT RACK FOR ATTACHMENT TO DISHES OR THE LIKE
Eugene H. Northway, 217 N. Redrock, Anaheim, Calif. 92807
Filed Apr. 16, 1982, Ser. No. 369,131
Term of patent 14 years
U.S. Cl. D7—39

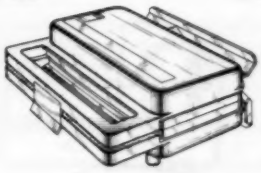
274,110
BEVERAGE TRAY
Henry R. Vigue, Waterville, Me., assignor to Keyes Fibre Company, Waterville, Me.
Filed Mar. 22, 1982, Ser. No. 360,608
Term of patent 14 years
U.S. Cl. D7—71

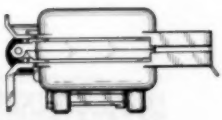
274,111
BARBECUE FOR PLACEMENT IN AN OPENING IN A CABINET, TABLE OR THE LIKE
Susumu Naito, and Kotaro Tanaka, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Aichi, Japan
Filed Sep. 17, 1981, Ser. No. 303,183
Claims priority, application Japan, Mar. 27, 1981, 56-12471
Term of patent 14 years
U.S. Cl. D7—337

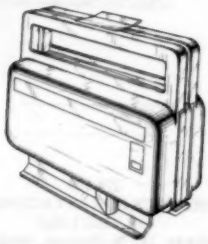


274,112
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Mar. 29, 1982, Ser. No. 362,975
Term of patent 14 years
U.S. Cl. D7—137

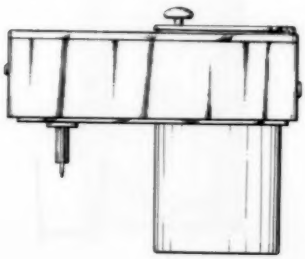
274,113
SANDWICH MAKER
Norman A. Steinkamp, La Grange Park, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Mar. 15, 1982, Ser. No. 358,179
Term of patent 14 years
U.S. Cl. D7—352





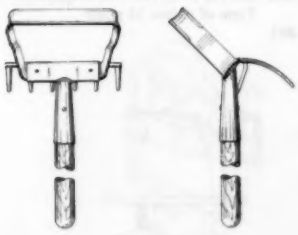


274,114
AUTOMATING ADAPTER UNIT FOR BEVERAGE DISPENSING MACHINES
Robert K. Cleland, 11051 Via El Mercado, Los Alamitos, Calif. 90720
Filed Nov. 10, 1981, Ser. No. 319,960
Term of patent 14 years
U.S. Cl. D7—397



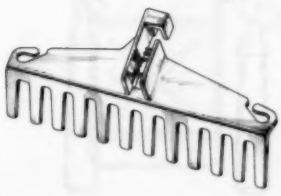
274,115
COFFEE FILTER HOLDER
Brian J. Gavin; Christopher C. Gavin, and Michael T. Gavin, all of 3380 Merrick Rd., Seaford, L.I., N.Y. 11783
Filed May 27, 1982, Ser. No. 382,575
Term of patent 14 years
U.S. Cl. D7—400

274,116
GARDEN HOE AND RAKE COMBINATION, OR SIMILAR ARTICLE
Robert J. Lidikay, and Carmela G. Lidikay, both of P.O. Box 123, Adelanto, Calif. 92301
Filed Feb. 18, 1982, Ser. No. 350,128
Term of patent 14 years
U.S. Cl. D8—6

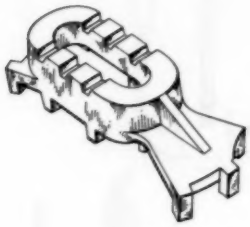


274,117
LAWN EDGER
Rudolph Lapps, 22444 Remick, Mt. Clemens, Mich. 48043
Filed Oct. 28, 1982, Ser. No. 437,126
Term of patent 14 years
U.S. Cl. D8—7

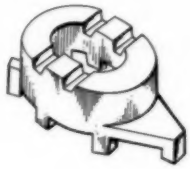
274,118
GOLF RAKE
Laurie J. Cochrane, 17 Derby St., Devonport, Auckland, New Zealand
Filed Nov. 30, 1982, Ser. No. 445,525
Claims priority, application New Zealand, Jun. 4, 1982, 17732
Term of patent 14 years
U.S. Cl. D8—13



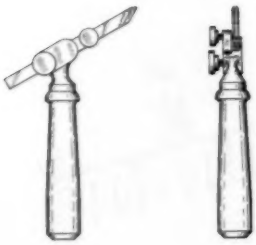
274,119
TOOL FOR MAKING A THROUGH HOLE
Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Oct. 14, 1981, Ser. No. 311,234
Claims priority, application Sweden, Apr. 24, 1981, 81-1034
Term of patent 14 years
U.S. Cl. D8—14



274,120
TOOL FOR MAKING A THROUGH HOLE
Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Oct. 14, 1981, Ser. No. 311,236
Claims priority, application Sweden, Apr. 24, 1981, 81-1033
Term of patent 14 years
U.S. Cl. D8—14

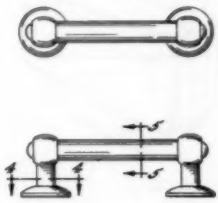


274,121
TOOL FOR CUTTING STAINED GLASS PATTERNS
Timothy C. O'Neill, Troutdale; George T. Tester, and Barbara Tester, both of Corbett, all of Oreg., assignors to Artmob, Inc., Corbett, Oreg.
Filed Jun. 21, 1982, Ser. No. 390,300
Term of patent 14 years
U.S. Cl. D8—98

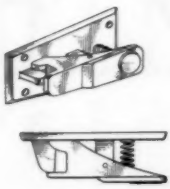


274,122
MOTORCYCLE HANDLEBAR GRIP
Alwin J. Stahel, St. Paul, and James M. Preisler, Mound, both of Minn., assignors to Drag Specialties, Inc., Minnetonka, Minn.
Filed Jun. 20, 1983, Ser. No. 506,281
Term of patent 14 years
U.S. Cl. D8—303

274,123
PULL
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Sep. 13, 1982, Ser. No. 417,124
Term of patent 14 years
U.S. Cl. D8—316

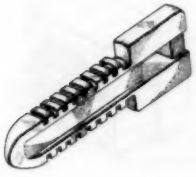


274,124
HOLDER AND RELEASE DEVICE FOR A CHAIN LOCK
Harvey G. Bennett, and Owen E. Hearold, both of P.O. Box 1065, Minden, Nev. 89423
Filed Apr. 23, 1982, Ser. No. 371,114
Term of patent 14 years
U.S. Cl. D8—341

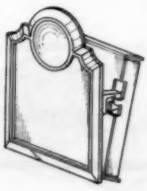


274,125
SAFETY CHAIN LOCK FOR A DOOR OR SIMILAR STRUCTURE
Kenneth A. Hardesty, 960 Second St., #201, Encinitas, Calif. 92024, and Robert R. Allen, II, 1598 Kaweah, Palm Springs, Calif. 92263
Filed Jun. 7, 1982, Ser. No. 385,937
Term of patent 14 years
U.S. Cl. D8—341

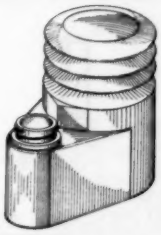
274,126
ELECTRONIC INFORMATION KEY
William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.
Filed Sep. 17, 1982, Ser. No. 419,570
Term of patent 14 years
U.S. Cl. D8—347



274,127
MAGNETIC CLIP
Ruediger Einhorn, Katonah, and Lee R. Chasen, Port Chester, both of N.Y., assignors to Coats & Clark, Inc., New Rochelle, N.Y.
Filed Oct. 23, 1980, Ser. No. 199,838
Term of patent 14 years
U.S. Cl. D8—395



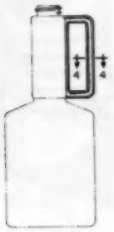
274,128
COMBINED BELLOWS PUMP AND FLUID DISPENSING CONTAINER
Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425
Filed Aug. 13, 1981, Ser. No. 292,651
Term of patent 14 years
U.S. Cl. D9—301



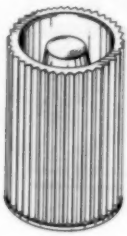
274,129
BOTTLE
Gerard E. Lyons, Burlington, Canada, assignor to ABC Plastic Moulding, Rexdale, Canada
Filed Jun. 29, 1981, Ser. No. 278,544
Claims priority, application Canada, Jun. 4, 1981, 04-06-81-3
Term of patent 14 years
U.S. Cl. D9—375

274,130
JUG
Robert C. Collins, II, Kentwood, Mich., assignor to Amway Corporation, Ada, Mich.
Filed Oct. 9, 1981, Ser. No. 309,997
Term of patent 14 years
U.S. Cl. D9—376

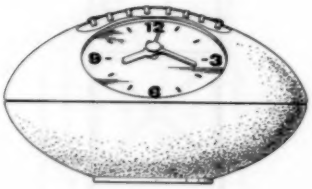
274,131
CONTAINER HANDLE OR SIMILAR ARTICLE
Thomas H. Hayes, Westport, Conn., assignor to Hoover Universal, Inc., Ann Arbor, Mich.
Filed Jun. 3, 1981, Ser. No. 269,546
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—434



274,132
CONTAINER CAP
William T. Nightingale, III, Campbell, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.
Filed Jan. 25, 1982, Ser. No. 342,184
Term of patent 14 years
U.S. Cl. D9—453

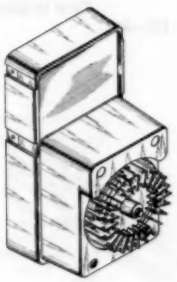


274,133
CLOCK
John C. Dillon, Ridgewood, N.J., assignor to SportsClocks, Inc., Charlotte, N.C.
Filed May 17, 1982, Ser. No. 379,121
Term of patent 14 years
U.S. Cl. D10—6



274,134
STRENGTH METER
Charlton Sadler, P.O. Box 446, Brooksville, Fla. 33512
Continuation-in-part of Ser. No. 45,080, Jun. 4, 1979, Pat. No. 263,568. This application Jan. 12, 1982, Ser. No. 339,048
Term of patent 14 years
U.S. Cl. D10—83

274,135
AUTOMATIC SET-BACK CONTROL FOR GAS WATER HEATER
Grove M. Anderson, Simi Valley, Calif., assignor to Aidan Industries, Inc., Los Angeles, Calif.
Filed May 3, 1982, Ser. No. 373,853
Term of patent 14 years
U.S. Cl. D10—50

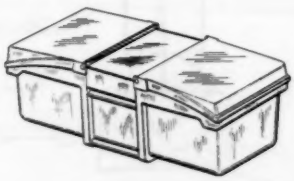


274,136
MASTER CYLINDER RESERVOIR COVER FOR MOTORCYCLES OR THE LIKE
Alwin J. Stabel, St. Paul, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.
Filed May 26, 1982, Ser. No. 382,075
Term of patent 14 years
U.S. Cl. D12—114

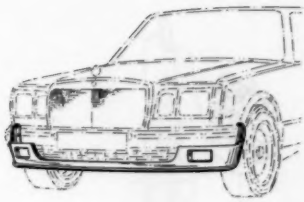
274,137
MASTER CYLINDER RESERVOIR COVER FOR MOTORCYCLES OR THE LIKE
Alwin J. Stahel, St. Paul, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.
Filed May 26, 1982, Ser. No. 382,076
Term of patent 14 years
U.S. Cl. D12—114

274,138
ELONGATED PATCH FOR ARMREST PANEL FOR VEHICLES
John B. Grussner, 5123 Argonne, Trenton, Mich. 48183
Filed Feb. 11, 1982, Ser. No. 347,411
Term of patent 14 years
U.S. Cl. D12—155

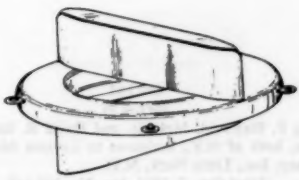
274,139
UTILITY BOX FOR PICKUP TRUCKS
William T. Suffern, Guelph, and Allan D. Osborne, Rockwood, both of Canada, assignors to Fiberglas Canada Inc., Toronto, Canada
Filed Sep. 28, 1982, Ser. No. 425,606
Claims priority, application Canada, Aug. 16, 1982, 16-08-82-13
Term of patent 14 years
U.S. Cl. D12—157



274,140
SPOILER
Adolf Koch, Waiblingen-Neustadt, Fed. Rep. of Germany, assignor to Autohaus Lorinser GmbH & Co., Waiblingen, Fed. Rep. of Germany
Filed May 19, 1981, Ser. No. 265,235
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 856
Term of patent 14 years
U.S. Cl. D12—181

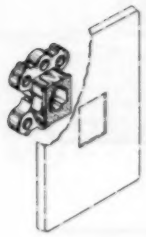


274,141
FLOAT
Ruben S. Carrillo, 828 N. Neptune Ave., Wilmington, Calif. 90744
Filed Mar. 22, 1982, Ser. No. 360,814
Term of patent 14 years
U.S. Cl. D12—316



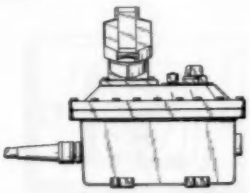
274,142
WIND FAIRING
Robert B. McNab, and James A. Wolfe, both of Jonesboro, Tenn., assignors to Aeronautical Accessories, Inc., Blountville, Tenn.
Filed Feb. 8, 1982, Ser. No. 346,924
Term of patent 14 years
U.S. Cl. D12—345

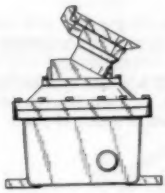
274,143
TELEPHONE EQUIPMENT FEMALE CONNECTOR FOR MOUNTING IN APERTURED ESCUTCHEON PLATE
Kenneth D. Topel, Puyallup, Wash., assignor to Crest Industries, Inc., Puyallup, Wash.
Filed Mar. 10, 1982, Ser. No. 356,934
Term of patent 14 years
U.S. Cl. D13—30



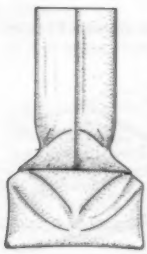
274,144
SWITCH
Wolfgang F. Bienwald, Melville, and David B. Balaban, Douglaston, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,319
Term of patent 14 years
U.S. Cl. D13—32

274,145
EXPLOSION-PROOF BOX FOR ELECTRICAL COMPONENTS
Denver K. Kimberlin, Pauls Valley, Okla., assignor to Engineering Enterprises, Inc., Norman, Okla.
Filed Feb. 26, 1982, Ser. No. 352,576
Term of patent 14 years
U.S. Cl. D13—40

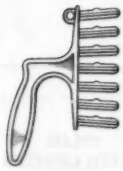




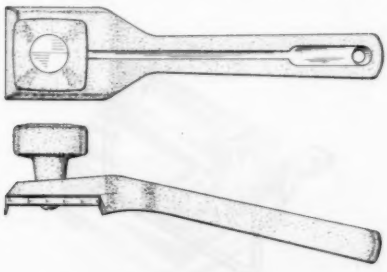
274,146
SPITTOON CAN RETAINER
Clarice R. Sicko, 7055 Countryview, San Antonio, Tex. 78240
Filed Nov. 2, 1981, Ser. No. 317,309
Term of patent 14 years
U.S. Cl. D34—2



274,147
BLIND CLEANER
Jeff A. Jacobson, 22 Woodgrove, Irvine, Calif. 92744
Filed Aug. 1, 1983, Ser. No. 519,025
Term of patent 14 years
U.S. Cl. D32—52

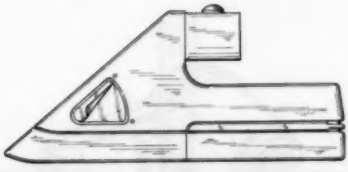


274,148
PAINT SCRAPER
Edward D. Levy, Franklin Lakes, N.J., assignor to Red Devil, Inc., Union, N.J.
Filed May 11, 1982, Ser. No. 377,182
Term of patent 14 years
U.S. Cl. D32—48



274,149
DESIGN FOR AN UPRIGHT VACUUM CLEANER
Robert R. Gibson, Marietta, Ga., assignor to The Singer Company, Stamford, Conn.
Filed Jul. 23, 1982, Ser. No. 401,159
Term of patent 14 years
U.S. Cl. D32—22

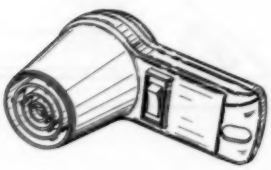
274,150
UPHOLSTERY CLEANER
Christoph Hoesch, Essen, Fed. Rep. of Germany, assignor to Vorwerk & Co. Elektrowerke KG, Wuppertal, Fed. Rep. of Germany
Filed Jan. 25, 1982, Ser. No. 342,169
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 54 MR 14 534
Term of patent 14 years
U.S. Cl. D32—18



274,151
ANIMAL EAR TAG SHIELD
Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Cody, Wyo.
Filed Aug. 24, 1981, Ser. No. 295,779
Term of patent 14 years
U.S. Cl. D30—43

274,152
BIRD CAGE
Sandra Fleming, 3628 E. Oak Rim Way, Salt Lake City, Utah 84109
Filed Jan. 18, 1982, Ser. No. 340,310
Term of patent 14 years
U.S. Cl. D30—4

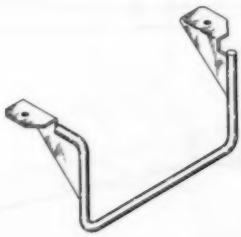
274,153
HAIR DRYER
Petrus Jacobus J. Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 9, 1982, Ser. No. 396,934
Claims priority, application Benelux, Jan. 25, 1982, 56491-01
Term of patent 14 years
U.S. Cl. D28—13



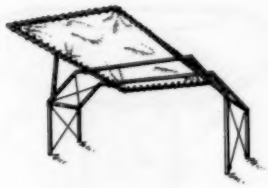
274,154
TOOTHPICK
Robert W. Bondurant, P.O. Box 9055, Montgomery, Ala. 36108
Filed Aug. 5, 1981, Ser. No. 290,163
Term of patent 14 years
U.S. Cl. D28—64

274,155
CIGARETTE CASE WITH LIGHTER COMPARTMENT
Ludolf Klein, Great Neck, N.Y., assignor to Richton International Corporation, New York, N.Y.
Filed Mar. 8, 1982, Ser. No. 356,189
Term of patent 14 years
U.S. Cl. D27—48

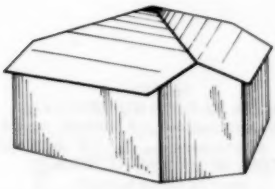
274,156
AUTOMOBILE FOG LAMP GUARD
Helmut Habicht, 15 Royal Park Ter., Hillsdale, N.J. 07642
Filed Apr. 29, 1982, Ser. No. 373,227
Term of patent 14 years
U.S. Cl. D26—139



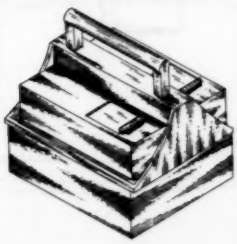
274,157
AIRCRAFT CANOPY
Douglas T. Freeland, 1921 Loring St., San Diego, Calif. 92109
Filed Aug. 17, 1982, Ser. No. 409,005
Term of patent 14 years
U.S. Cl. D25—56



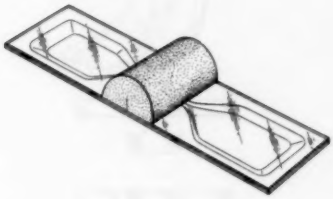
274,158
HOUSING UNIT
Raoul Techenet, 154 Boulevard Haussman, Paris, France (75008)
Filed Aug. 6, 1981, Ser. No. 290,709
Claims priority, application France, Feb. 16, 1981, 81 0519
Term of patent 14 years
U.S. Cl. D25—22



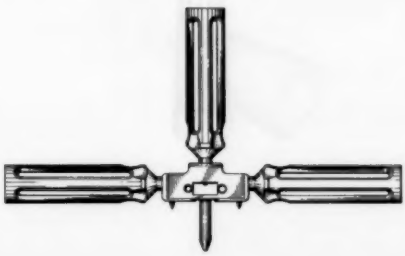
274,159
HYPODERMIC SYRINGE DESTRUCTION AND DISPOSAL DEVICE
Esperanto J. Simicich, 4673 S. Friday Circle, Cocoa, Fla. 32922
Filed Oct. 15, 1980, Ser. No. 197,266
Term of patent 14 years
U.S. Cl. D24—99



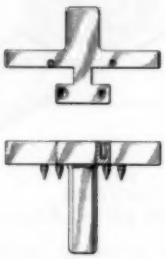
274,160
DISPOSABLE SWAB APPLICATOR PACKAGE WITH STANDBY RESERVOIR
Jack W. Ksufman, 357 Frankel Blvd., Merrick, N.Y. 11566
Division of Ser. No. 246,379, Mar. 23, 1981. This application Aug. 18, 1983, Ser. No. 524,416
Term of patent 14 years
U.S. Cl. D24—34



274,161
DISTAL FEMORAL CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,014
Term of patent 14 years
U.S. Cl. D24—26

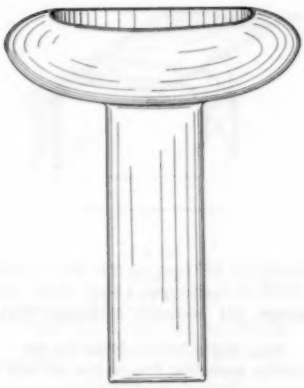


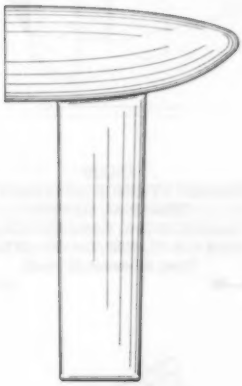
274,162
DISTAL FEMORAL CUTTING JIG FOR THE IMPLANTATION OF A PROSTHETIC KNEE
Robert V. Kenna, Hackensack, N.J., assignor to Howmedica, Inc., New York, N.Y.
Filed Feb. 18, 1982, Ser. No. 350,010
Term of patent 14 years
U.S. Cl. D24—26



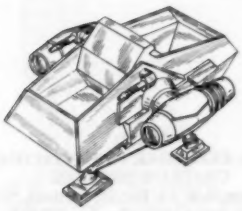
274,163
LAVATORY PEDESTAL
Charles D. Miller, Kansas City, Mo., assignor to Broadway Industries, Inc., Kansas City, Mo.
Filed Aug. 23, 1982, Ser. No. 410,403
Term of patent 14 years
U.S. Cl. D23—70

274,164
LAVATORY
Axel Enthoven, Wijnegen, Belgium, assignor to American Standard, Inc., New York, N.Y.
Filed Apr. 12, 1982, Ser. No. 367,325
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1981, 20 MR 1910
Term of patent 14 years
U.S. Cl. D23—61

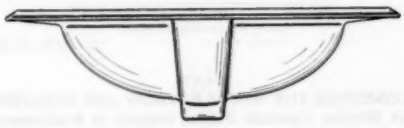


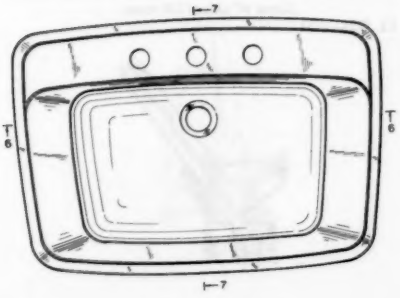


274,165
TOY VEHICLE
Mark D. Duennes, New Baltimore, Mich., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Dec. 16, 1981, Ser. No. 331,434
Term of patent 14 years
U.S. Cl. D21—134



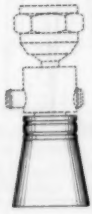
274,166
LAVATORY OR SIMILAR ARTICLE
Jack N. Kaiser, Danville, Ky., assignor to American Standard, Inc., New York, N.Y.
Filed Feb. 22, 1982, Ser. No. 350,775
Term of patent 14 years
U.S. Cl. D23—58

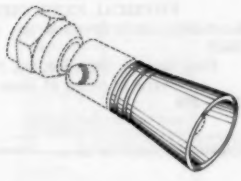




274,167
BABY BATH
John H. Lyne, Strathfieldsaye, Australia, assignor to Arthur W. Pulfer, Victoria, Australia
Filed Oct. 21, 1981, Ser. No. 313,498
Claims priority, application Australia, Jun. 26, 1981, 84490
Term of patent 14 years
U.S. Cl. D23—52

274,168
SHOWER HEAD NOZZLE SHROUD
Wilbur W. Whedon, West Hartford, and Raymond T. Proulx, Wethersfield, both of Conn., assignors to Whedon Products, Inc., West Hartford, Conn.
Division of Ser. No. 267,698, May 27, 1981. This application Dec. 29, 1982, Ser. No. 454,237
The portion of the term of this patent subsequent to Mar. 1, 1983, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—36





274,169
TRIGGER FOR REEL SEAT
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Oct. 14, 1981, Ser. No. 311,241
Claims priority, application Japan, Sep. 8, 1981, 56/39669
Term of patent 14 years
U.S. Cl. D22—23

274,170
CARTRIDGE MAGAZINE
Ronald D. Retzlaff, Anaheim, and Edwin L. Harrison, Whittier, both of Calif., assignors to Creative Metal Forming, Inc., Anaheim, Calif.
Filed Mar. 3, 1982, Ser. No. 432,306
Term of patent 14 years
U.S. Cl. D22—7

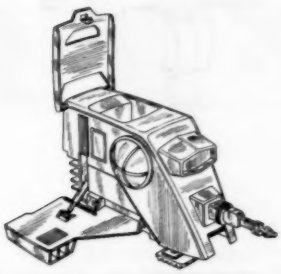
274,171
PHYSICAL EXERCISER
Pericles Gabrielidis, 14141 Riverside Dr., #1, Sherman Oaks, Calif. 91423
Filed Apr. 29, 1982, Ser. No. 372,931
Term of patent 14 years
U.S. Cl. D21—198

274,172
PHYSICAL EXERCISER
Pericles Gabrielidis, 14141 Riverside Dr., #1, Sherman Oaks, Calif. 91423
Filed Apr. 29, 1982, Ser. No. 372,930
Term of patent 14 years
U.S. Cl. D21—198

274,173
ABDOMINAL EXERCISER FOR ATTACHMENT TO CHAIR OR THE LIKE
Martin W. Johnson, R.R. #1, Box 95, Portland, N. Dak. 58274
Filed Jan. 4, 1982, Ser. No. 337,512
Term of patent 14 years
U.S. Cl. D21—191

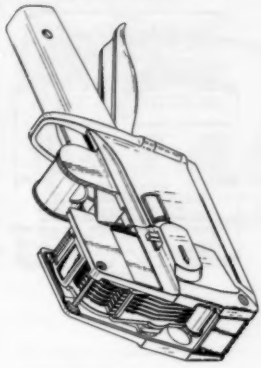
274,174
COMBINED TOY WHEELBARROW AND SCRAPER
Marc Rivollet, Oyonnax, France, assignor to Etablissements Fernand Berchet, Oyonnax, France
Filed Jun. 8, 1981, Ser. No. 271,614
Claims priority, application France, Dec. 8, 1980, 803787
Term of patent 14 years
U.S. Cl. D21—134

274,175
TOY VEHICLE
Mark D. Boudreaux, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.
Filed May 20, 1982, Ser. No. 380,160
Term of patent 14 years
U.S. Cl. D21—132

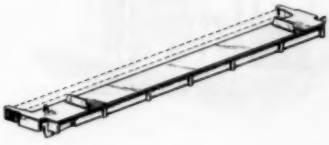


274,176
WEIGHTED AERIAL TOY
Darrell F. Hill, R.R. 1, Box 96, Oakland City, Ind. 47660
Filed Jul. 13, 1981, Ser. No. 282,793
Term of patent 14 years
U.S. Cl. D21—82

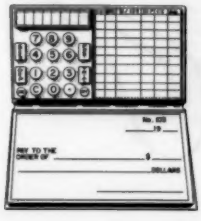
274,177
LABELER
Tokio Wada, Nagareyamashi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Tokyo, Japan
Filed Jul. 13, 1982, Ser. No. 397,853
Claims priority, application Japan, Feb. 10, 1982, 57-5076
Term of patent 14 years
U.S. Cl. D18—19



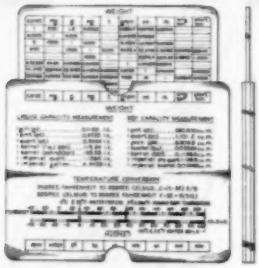
274,178
RIBBON CARTRIDGE
William M. Schiffmacher, Boulder, Colo., assignor to Aspen Ribbons, Inc., Boulder, Colo.
Filed Apr. 25, 1983, Ser. No. 488,062
Term of patent 14 years
U.S. Cl. D18—12

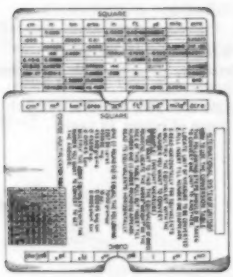


274,179
COMBINED ELECTRONIC CALCULATOR AND CHECKBOOK
John T. Siwula, 145 Sanford Dr., Jamestown, N.Y. 14071
Filed Feb. 4, 1981, Ser. No. 231,587
Term of patent 14 years
U.S. Cl. D18—7



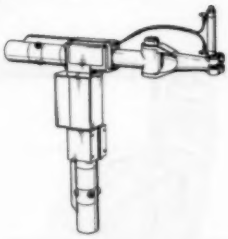
274,180
CONVERSION DEVICE
Romeo L. Llarena, Detroit, Mich., assignor to Avelino M. Mape, West Bloomfield, Mich.
Filed Aug. 3, 1981, Ser. No. 289,275
Term of patent 14 years
U.S. Cl. D18—6





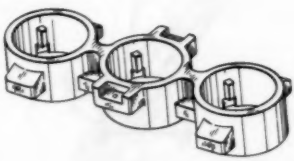
274,181
CLIP-ON SUNGLASSES OR SIMILAR ARTICLE
Robert E. Abate, Quincy, and Douglas E. Nieh, Westwood, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jun. 29, 1981, Ser. No. 278,319
Term of patent 14 years
U.S. Cl. D16—112

274,182
INDUSTRIAL ROBOT
Hiroshi Kato, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Aug. 16, 1982, Ser. No. 408,079
Claims priority, application Japan, Feb. 23, 1982, 57-7503
Term of patent 14 years
U.S. Cl. D15—199

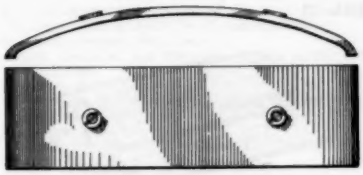


274,183
CUTTING BLADE
William A. Prokop, Newtown, Conn., and Gerd Dahle, Coburg, Fed. Rep. of Germany, assignors to Dahle U.S.A., Oxford, Conn.
Filed Apr. 27, 1981, Ser. No. 257,518
Term of patent 14 years
U.S. Cl. D15—139

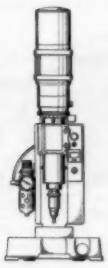
274,184
CARRIER BODY
James G. Wiatt; James W. Calvert; Samuel L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Jul. 13, 1981, Ser. No. 283,028
Term of patent 14 years
U.S. Cl. D15—138



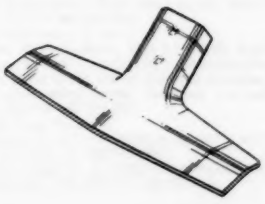
274,185
ABRASIVE BLASTING WHEEL LINER
W. David Watts, P.O. Box 48,166, Atlanta, Ga. 30362
Filed Apr. 22, 1981, Ser. No. 256,495
Term of patent 14 years
U.S. Cl. D15—126



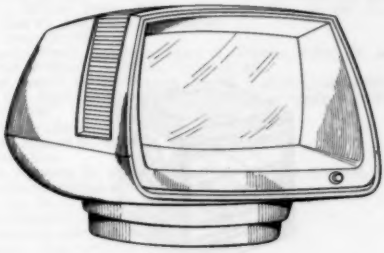
274,186
RIVETING MACHINE
Tatushi Asai, Aichi, and Minoru Yamada, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 2, 1981, Ser. No. 317,262
Claims priority, application Japan, May 20, 1981, 56-21630
Term of patent 14 years
U.S. Cl. D15—122



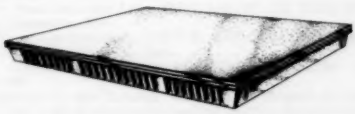
274,187
CULTIVATOR BLADE
Kelly A. Krammer, P.O. Box 144, Cupar, Saskatchewan, Canada (S0G 0Y0)
Filed Aug. 3, 1981, Ser. No. 289,161
Claims priority, application Canada, May 4, 1981, 04-05-81-2
Term of patent 14 years
U.S. Cl. D15—11



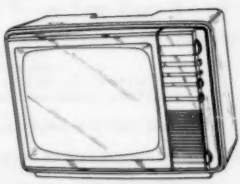
274,188
VIDEO DISPLAY TERMINAL OR SIMILAR ARTICLE
John W. Carroll, III, Pepperell, Mass., assignor to Data General Corporation, Westboro, Mass.
Filed Dec. 8, 1980, Ser. No. 213,987
Term of patent 14 years
U.S. Cl. D14—113



274,189
CABLE TELEVISION SET TOP DESCRAMBLER HOUSING OR THE LIKE
Svein T. Nordberg, El Paso, Tex., assignor to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1981, Ser. No. 296,732
Term of patent 14 years
U.S. Cl. D14—84



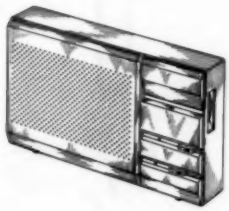
274,190
TELEVISION RECEIVER
Fumitaka Ito, Kawasaki; Yasusuke Seki, Tokyo, and Kazuyuki Tsuburaya, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 26, 1981, Ser. No. 296,342
Claims priority, application Japan, Oct. 27, 1980, 55-44539
Term of patent 14 years
U.S. Cl. D14—80



274,191
CLOCK RADIO RECEIVER
Dieudonne G. Aoijs, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 28, 1981, Ser. No. 306,123
Claims priority, application United Kingdom, Apr. 6, 1981, 999.818
Term of patent 14 years
U.S. Cl. D14—73

274,192
CLOCK RADIO RECEIVER
Dieudonne G. Aoijs, Hong Kong, Hong Kong, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 28, 1981, Ser. No. 306,068
Claims priority, application United Kingdom, Apr. 13, 1981, 999.991
Term of patent 14 years
U.S. Cl. D14—73

274,193
PORTABLE RADIO RECEIVER
Mario Matkovich, Clayton, Australia, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 28, 1981, Ser. No. 306,124
Claims priority, application United Kingdom, Apr. 6, 1981, 999.816
Term of patent 14 years
U.S. Cl. D14—71



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Eastman, James E., 4,452,978, Cl. 536-111.000.

A. H. Robins Company, Inc.: *See*—
Walsh, David A.; and Welstead, William J., Jr., 4,452,809, Cl. 424-274.000.

A. J. Antunes & Co.: *See*—
Miller, Dye O.; Antunes, August J.; and Antunes, Jerome, 4,452,132, Cl. 99-483.000.

A. Nattermann & Cie GmbH: *See*—
Gunther, Bernd-Rainer, 4,452,743, Cl. 260-403.000.

A T & T Bell Telephone Laboratories: *See*—
Frieber, George, 4,451,947, Cl. 7-107.000.

A. W. Faber-Castell: *See*—
Jankewitz, Axel, 4,452,262, Cl. 132-88.500.

Abaskalov, Vladimir D.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,452,295, Cl. 164-186.000.

Abe, Ryuzo: *See*—
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryuzo; Yusa, Yasuhiro; and Yoshihara, Kenji, 4,453,245, Cl. 369-230.000.

Abe, Shigeru: *See*—
Mitsuhashi, Hiroshi; Mizuno, Den-ichi; Hayashi, Koji; Abe, Shigeru; Takase, Muneaki; and Narita, Toshiharu, 4,452,786, Cl. 424-182.000.

Abendroth, Paul: *See*—
Geschwindner, Herbert; and Abendroth, Paul, 4,452,442, Cl. 271-204.000.

Abraham, Kuzhikalail M.; and Rupich, Martin W., to EIC Laboratories, Inc. Electrochemical cells. 4,452,777, Cl. 429-104.000.

Abrams, Michael J.: *See*—
Jones, Alun G.; Davison, Alan; and Abrams, Michael J., 4,452,774, Cl. 424-1.100.

ACF Industries, Inc.: *See*—
Meyer, Paul M., 4,452,202, Cl. 123-494.000.
Parks, James O., 4,453,192, Cl. 361-92.000.

Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for distributing continuously supplied tube sections to three production lines for making sacks. 4,452,443, Cl. 271-279.000.

Achelpohl, Fritz, to Windmoller & Holscher. Method and apparatus for forming stacks of sacks. 4,452,597, Cl. 493-204.000.

Acheson Industries, Inc.: *See*—
Levine, Walter E.; Heath, Allan B.; and Gossman, Richard C., 4,452,578, Cl. 239-463.000.

Acker, Frank E., to Westinghouse Electric Corp. Electric drive for submarines. 4,453,111, Cl. 318-111.000.

Acme Precision Products, Inc.: *See*—
Karr, Willis F.; and Kane, John P., 4,451,963, Cl. 29-407.000.

Acorn Engineering Company: *See*—
Morris, Earl L.; Hahn, Ron T.; and Sally, Theodore J., 4,453,202, Cl. 362-147.000.

Adachi, Koichiro: *See*—
Toyoda, Munemitsu; and Adachi, Koichiro, 4,453,064, Cl. 219-10.55F.

Adams, Claude L. Arrowhead construction. 4,452,460, Cl. 273-422.000.

Adams, Danny C.: *See*—
Eads, Harold O.; Fowler, Ronald R.; and Adams, Danny C., 4,452,468, Cl. 280-641.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,452,628, Cl. 71-93.000.

Adams, Kenneth D.: *See*—
McGann, Leo E.; and Adams, Kenneth D., 4,452,159, Cl. 112-258.000.

Adcock, Ralph L., to Sperry Corporation. Bus arbitrating circuit. 4,453,214, Cl. 364-200.000.

Adkisson, James W.; Davis, David W.; and Ishman, Paul A., to Florida Data Corporation. High speed printer with multiple paper paths. 4,452,543, Cl. 400-605.000.

Adolfs, Martinus J. P.: *See*—
Kort, Willy J.; Bonta, Ivan L.; Adolfs, Martinus J. P.; and Westbroek, Dirk L., 4,452,794, Cl. 424-240.000.

Adolph, Horst G., to United States of America, Navy. Dinitropropyl fluorodinitroethyl formal plasticizer and method of preparation. 4,453,021, Cl. 568-590.000.

Adolph, Horst G.: *See*—
Cichra, Dorothy A.; Adolph, Horst G.; and Kamlet, Mortimer J., 4,452,739, Cl. 260-239.0BC.

Adomeit, Heinz D., to Allied Corporation. Automatic belt reel lock mechanism. 4,452,405, Cl. 242-107.40A.

Adur, Ashok M.: *See*—
Shida, Mitsuzo; Zeitlin, Robert; Machonis, John, Jr.; and Adur, Ashok M., 4,452,942, Cl. 525-74.000.

Advani, Jeram G.: *See*—
Paganini, Bruno J.; Advani, Jeram G.; Whitely, Robert M.; and Hale, William J., 4,453,267, Cl. 382-29.000.

Ahlstrom, Ross C., Jr.; and Meppen, Craig E., to Dow Chemical Company, The. Apparatus for analysis of a vapor phase sample. 4,452,067, Cl. 73-23.100.

Air-Vend, Inc.: *See*—
Jurek, Richard D., 4,452,371, Cl. 220-315.000.

Airco, Inc.: *See*—
Kou, Abraham H.; Busby, Michael G.; Polenske, Errol E.; and Peickert, Wilfried R., 4,452,090, Cl. 73-861.280.

AirPol, Inc.: *See*—
Pike, Daniel E., 4,452,766, Cl. 423-242.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kawata, Shoji, 4,452,424, Cl. 251-129.000.
Nagata, Kazuhisa, 4,452,013, Cl. 49-344.000.

Ajinomoto Company Incorporated: *See*—
Kida, Takao; Ishikawa, Takehiko; and Shibai, Hiroshiro, 4,452,891, Cl. 435-126.000.
Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, 4,452,890, Cl. 435-115.000.

Akagiri, Kenzo: *See*—
Katakura, Masayuki; Akagiri, Kenzo; and Ookouchi, Motomi, 4,453,091, Cl. 307-350.000.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Film for packaging light-sensitive materials. 4,452,846, Cl. 428-220.000.

Akazawa, Hiroyuki, to Epson Corporation. Serial printer. 4,452,542, Cl. 400-175.000.

AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Bruna, Bernhard, 4,453,045, Cl. 179-146.00R.
Fidi, Werner; and Wolf, Konrad, 4,453,046, Cl. 179-146.00R.

Akimura, Yoshitaka; Okutsu, Eiichi; Moriuchi, Shigenori; Saeki, Naomi; Hashimura, Taiji; and Mifune, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic materials and process of developing them. 4,452,882, Cl. 430-441.000.

Akita, Shinji: *See*—
Numano, Masachika; and Akita, Shinji, 4,452,061, Cl. 72-201.000.

Aktiebolaget Electrolux: *See*—
Bloch, Einer; and Strindberg, Leif J. E., 4,452,475, Cl. 292-31.000.

Albert Handtmann GmbH & Co.: *See*—
Muller, Johann; and Staudenrausch, Georg, 4,451,954, Cl. 17-39.000.

Albisser, Anthony M.; and Jackman, Warren S., to Hospital for Sick Children, The. Method of delivering medical liquid by peristaltic tube pump. 4,452,599, Cl. 604-49.000.

Alcan Ohler GmbH: *See*—
Werner, Friedrich, 4,452,280, Cl. 138-131.000.

Aldrich, Haven S.; Ashcraft, Thomas L., Jr.; Puerto, Maura C.; and Reed, Ronald L., to Exxon Production Research Co. Oil recovery method using sulfonate surfactants derived from extracted aromatic feedstocks. 4,452,708, Cl. 252-8.55D.

Alexander, Jesse A., to Titanium Metals Corporation of America. Method of parting metallic rings. 4,452,112, Cl. 82-47.000.

Alfa Romeo Auto S.p.A.: *See*—
Merlini, Luigi; Bassi, Aldo; and Satta, Giuseppe, 4,452,208, Cl. 123-481.000.

Alfred Fischbach KG Kunststoff-Spritzgusswerk: *See*—
Langensiepen, Gert; and Bruning, Werner, 4,452,370, Cl. 220-93.000.

Allied Corporation: *See*—
Adomeit, Heinz D., 4,452,405, Cl. 242-107.40A.
Cipris, Divna; and Walsh, Arthur T., 4,452,675, Cl. 204-56.00R.
Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., 4,452,727, Cl. 252-518.000.
Patel, Gordhanbhai N.; and Ivory, Dawn M., 4,452,995, Cl. 560-166.000.
Robben, Paul J.; Legros, Raymond; and Rittersdorf, Udo, 4,451,958, Cl. 24-636.000.

Allis-Chalmers Corporation: *See*—
O'Dell, Leonard J., 4,452,617, Cl. 55-341.00R.
Patchen, Paul, II; and Chen, Colin C., 4,452,216, Cl. 123-563.000.

Alsthom-Atlantique: *See*—
Messe, Gerard; Faure, Michel; and Ducombs, Marcel, 4,453,150, Cl. 336-234.000.

Alston, Wilton D., to Eastman Kodak Company. Method for metering biological fluids. 4,452,899, Cl. 436-46.000.

Alteliers et Chantiers de Chantiers de Bretagne-ACB: *See*—
Roblin, Jean-Paul, 4,452,312, Cl. 166-339.000.

Althausen, Ferdinand: *See—*
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,452,917, Cl. 521-50.000.
Altman, James E. Multi sequence processing apparatus equipped with fail safe indexing mechanism. 4,452,104, Cl. 74-822.000.
Aluminum Company of America: *See—*
Laemmle, Joseph T., 4,452,711, Cl. 252-49.300.
Laemmle, Joseph T., 4,452,712, Cl. 252-49.300.
Amann, Hugo; and Funke, Dieter, to Siemens Aktiengesellschaft. Method and apparatus for transferring a bit pattern field into a memory. 4,453,227, Cl. 364-900.000.
Amano, Tomiaki; Eda, Tetsuya; Nishi, Sunao; Shichiri, Shigeyoshi; and Fukunaga, Takayuki, to Hitachi Kinzoku Kabushiki Kaisha; and Shinto Kogyo Kabushiki Kaisha. Aluminum-diffusion coated steel pipe gating system. 4,452,296, Cl. 164-363.000.
American Cyanamid Company: *See—*
Casey, Donald J.; and Roby, Mark S., 4,452,973, Cl. 528-354.000.
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Weinstein, Stephen B., 4,453,074, Cl. 235-380.000.
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Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,452,674, Cl. 204-33.000.
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Santilli, Arthur A.; Scotese, Anthony C.; Morris, Robert L.; and Bell, Stanley C., 4,452,985, Cl. 548-131.000.
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AMP Incorporated: *See—*
Forney, Edgar W., Jr., 4,452,503, Cl. 339-177.00R.
AMSTED Industries Incorporated: *See—*
Forte, Henry R., 4,452,561, Cl. 414-767.000.
Anderson, James W., to Construction Concepts, Inc. Natural wood suspended wood ceiling or wall system employing clip means. 4,452,021, Cl. 52-311.000.
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Shaw, John R. H.; and Anderson nee Mounsey, Diana M., 4,452,706, Cl. 210-722.000.
Anderson, Vyron E., to Kwik-Way Manufacturing Company. Adjustable disk and drum lathe mechanism with automatic drive. 4,452,111, Cl. 82-4.00A.
Andersson, Birger A. V., to Saab-Scania Aktiebolag. Means for limiting rotation speed of a vertical shaft wind turbine. 4,452,568, Cl. 416-119.000.
Andreasson, Bo C., to EMAB Electrolux Motor Aktiebolag. Non-contact ignition system. 4,452,199, Cl. 123-335.000.
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Ozin, Geoffrey A.; and Andrews, Mark P., 4,452,913, Cl. 502-184.000.
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Ansems, Henricus J. Supporting device. 4,452,414, Cl. 248-278.000.
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Applied Power Inc.: *See—*
Oudelaar, Tone, 4,452,328, Cl. 180-89.140.
Arai, Fuminori: *See—*
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Arao, Kozo, to Canon Kabushiki Kaisha. Image forming apparatus with vibration compensation. 4,453,170, Cl. 346-160.000.
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Sebastiani, Enrico; and Archi, Augusto, 4,452,063, Cl. 72-356.000.
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Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, to Mitsubishi Chemical Industries Limited; and Japan Atomic Energy Research Institute. Dye laser. 4,453,252, Cl. 372-53.000.
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Lenox, Ronald S.; Schwartz, Anne L.; and Sparks, Moses, Jr., 4,452,604, Cl. 8-471.000.
Arndt, Diether; and Hobein, Dietmar, to BASF Aktiengesellschaft. Process for stabilizing rock and coal formations by bonding these formations to themselves or other geological formations. 4,452,551, Cl. 405-264.000.
Arnold, John E. Bucket holder. 4,452,415, Cl. 248-312.100.
Arp, David F., to Southwire Company. Combustion air blower surge control for a melting furnace. 4,452,585, Cl. 432-24.000.
Arronte, Ernesto. Dispenser for material arranged in a roll. 4,452,403, Cl. 242-55.200.
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Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, 4,452,571, Cl. 417-286.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Uchida, Takateru; Noguchi, Kohji; and Kiyota, Takao, 4,452,918, Cl. 521-52.000.
Asahi Seimitsu Kabushiki Kaisha: *See—*
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Ascasibar-Verdejo, Francisco. Closure device for hermetically sealing containers. 4,452,365, Cl. 215-346.000.
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Aldrich, Haven S.; Ashcraft, Thomas L., Jr.; Puerto, Maura C.; and Reed, Ronald L., 4,452,708, Cl. 252-8.55D.
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Gruber, Bruce A.; Langer, Heimo J.; and Dunnavant, William R., 4,452,299, Cl. 164-521.000.
Ashton, W. Ronald: *See—*
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Mattsson, Soren; Holmer, Nils-Gunnar; Bernstein, Kurt; Ulmsten, Ulf; Astedt, Birger; and Jacobsson, Lars, 4,453,075, Cl. 250-363.00S.
AT&T Technologies, Inc.: *See—*
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Atieh, Jennifer M.: *See—*
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Atomic Energy of Canada Limited: *See—*
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Atwell, William J., to Titeflex Corporation. Silicone/elastomer fiberglass sleeves. 4,452,279, Cl. 138-126.000.
Atzinger, Louis E. Sectional scaffolding raising apparatus. 4,452,337, Cl. 182-178.000.
Au, Andrew T.; and Jung, Chu W., to Dow Chemical Company, The. Preparation of aromatic aldehydes. 4,453,016, Cl. 568-432.000.
Auditronics, Inc.: *See—*
Paullus, Jeffrey O., 4,453,131, Cl. 330-97.000.
Aufderhaar, Ernst, to Ciba-Geigy Corporation. Process for the manufacture of 5-carbamoyl-10-oxo-10,11-dihydro-5H-dibenz[b,f]azepine. 4,452,738, Cl. 260-239.00D.
Augstein, Wolfgang; Frasch, Peter; Ivancic, Blanka; and Zuegel, Markus A., to International Business Machines Corporation. Method of adjusting the edge angle in polysilicon. 4,452,881, Cl. 430-323.000.
Ausherman, Harry S. Exercising machine. 4,452,448, Cl. 272-131.000.
Auto-Masters Ltd.: *See—*
Marsh, Charles R., 4,452,598, Cl. 493-354.000.
Avco Corporation: *See—*
Waddington, Clive; Lagasse, Normand; Kuintzle, Charles, Jr.; and Blake, Donald, 4,452,037, Cl. 60-39.080.
AVM Corporation: *See—*
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Ritchie, Kim; and Keller, Jed V., 4,453,199, Cl. 361-306.000.
Axenov, Ivan I.; Belous, Vitaly A.; Padalka, Valentin G.; and Khoroshikh, Vladimir M. Arc plasma generator and a plasma arc apparatus

for treating the surfaces of work-pieces, incorporating the same arc plasma generator. 4,452,686, Cl. 204-298.000.
Ayeva, Aboudourahim. Articulated coach coupling means. 4,452,163, Cl. 114-77.00R.
B. F. Goodrich Company, The: *See*—
Benedikt, George M., 4,452,953, Cl. 525-344.000.
B & W Corporation: *See*—
Wood, Ronald L., Jr.; and Tempas, Robert J., 4,452,498, Cl. 312-216.000.
Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for separating stacks placed on stack feed conveyor. 4,452,353, Cl. 198-492.000.
Babcock & Wilcox Company, The: *See*—
Peterson, Morris W.; and Hurst, Thomas B., 4,452,765, Cl. 423-242.000.
Babson Bros. Co.: *See*—
Thompson, Duncan M.; and Swanson, Harold V., 4,452,175, Cl. 119-14.030.
Baccei, James S. C., to Litton Systems, Inc. Contact mounting press. 4,451,975, Cl. 29-705.000.
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Bacus, James W., to Rush-Presbyterian-St. Luke's Medical Center. Method and apparatus for measuring mean cell volume of red blood cells. 4,453,266, Cl. 382-6.000.
Bader, Robert F.; and Koff, Dennis K. Surgical instrument. 4,452,246, Cl. 128-340.000.
Badger, Edward W.: *See*—
Bristol, James A.; and Badger, Edward W., 4,452,788, Cl. 424-253.000.
Bahadir, Mufit; and Payer, Wolfgang, to Ruhrchemie Aktiengesellschaft. Process for producing a supported catalyst for the polymerization of α-olefins. 4,452,912, Cl. 502-111.000.
Baida, Dmitry F.: *See*—
Kletsel, Mark Y.; Polyakov, Valentin E.; Novozhilov, Alexandr N.; Solodukhin, Ivan N.; Chepeljuk, Yakov Z.; and Baida, Dmitry F., 4,453,190, Cl. 361-31.000.
Bailey, Berton K.: *See*—
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Baker International Corporation: *See*—
Brooks, Robert T., 4,452,583, Cl. 431-202.000.
Bakowski, Thomas G.: *See*—
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Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Dual polarity sync processor. 4,453,183, Cl. 358-148.000.
Ball, William J.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the production of crystalline aluminosilicates and their use as catalysts and catalyst supports. 4,452,907, Cl. 502-60.000.
Ball, William J.; and Stewart, David G., to British Petroleum Company p.l.c., The. Process for the production of catalysts based on crystalline aluminosilicates. 4,452,908, Cl. 502-61.000.
Ballach, Reinhold; Kroll, Dieter; and Rinn, Jurgen, to Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH. Lathe for simultaneous machining of two workpieces. 4,452,109, Cl. 82-3.000.
Balogh, Akos; and Szeher, Laszlo, to Komarom Megyei Tanacsi Tervezo Iroda. Pond with filtered water. 4,452,548, Cl. 405-52.000.
Bamberger, Carlos E.: *See*—
Brynestad, Jorulf; and Bamberger, Carlos E., 4,452,767, Cl. 423-297.000.
Banitt, Elden H.: *See*—
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Banziger, Fritz, to Dragerwerk Aktiengesellschaft. Respirator for use in pressure chambers. 4,452,242, Cl. 128-205.260.
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Barnes, Richard D., to Southern Imperial, Inc. Hanger assembly with U-shaped hanger. 4,452,360, Cl. 211-59.100.
Barrier, Frank W.; and Winterrowd, Kenneth W., to Tri-State Oil Tool Industries. Remotely operated packer and anchor apparatus for changing a geothermal wellhead valve. 4,452,304, Cl. 166-70.000.
Bartels, Bruce C.: *See*—
Holtrop, John W.; and Bartels, Bruce C., 4,452,123, Cl. 89-1.706.
Barth, Wayne E., to Pfizer Inc. 6-Aminoalkylpenicillanic acid 1,1-dioxides as beta-lactamase inhibitors. 4,452,796, Cl. 424-246.000.
Barton, Robert I. Irrigation system. 4,452,397, Cl. 239-455.000.
BASF Aktiengesellschaft: *See*—
Arndt, Diether; and Hobein, Dietmar, 4,452,551, Cl. 405-264.000.
Horacek, Heinrich; Gehm, Robert; Frank, Wolfram; and Marx, Matthias, 4,452,921, Cl. 521-118.000.
Marx, Matthias; and Straehle, Wolfgang, 4,452,997, Cl. 560-200.000.
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Hirozawa, Stanley T., 4,452,715, Cl. 252-75.000.
Pepoy, Louis J., 4,452,740, Cl. 260-245.830.
Wilson, Joe C.; Hirozawa, Stanley T.; Eisenstein, Stephen E.; and Maxwell, Jerrold F., 4,452,758, Cl. 422-15.000.
Bassi, Aldo: *See*—
Merlini, Luigi; Bassi, Aldo; and Satta, Giuseppe, 4,452,208, Cl. 123-481.000.
Batchelor, John F.; Vinter, Jeremy G.; and Hodson, Harold F. Flavan derivatives useful for impairing RNA virus replication in a cell. 4,452,991, Cl. 549-383.000.
Batinovich, Victor A., to National Semiconductor Corporation. Method of making electronic chip with metalized back including a surface stratum of solder. 4,451,972, Cl. 29-583.000.
Baudoin, Andre, to Creusot-Loire; and Commissariat a l'Energie Atomique. Sodium-water type steam generators. 4,452,182, Cl. 122-32.000.
Bauer, Johann: *See*—
Streich, Georg; Harbauer, Werner; and Bauer, Johann, 4,453,057, Cl. 200-243.000.
Bauer, Michael E., to Kohler Co. Control circuit for a generator. 4,453,120, Cl. 322-28.000.
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Baumeler, Josef; and Egli, Hans-Ulrich, to Inventio AG. Light barrier, particularly for automatically actuated lift cabin doors. 4,452,009, Cl. 49-25.000.
Baxter Travenol Laboratories, Inc.: *See*—
Ruschke, Ricky R., 4,452,473, Cl. 285-81.000.
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Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,452,905, Cl. 501-81.000.
Hamprecht, Rainer, 4,452,609, Cl. 8-694.000.
Klinkmann, Kurt; and Wambach, Paul R., deceased, 4,453,020, Cl. 568-473.000.
Lurssen, Klaus; Holmwood, Graham; Kramer, Wolfgang; Regel, Erik; Reiser, Wolf; and Schroder, Rolf, 4,452,625, Cl. 71-76.000.
Maurer, Werner; Zimmer, Johann; and Haus, Artur, 4,453,002, Cl. 562-429.000.
Musch, Rudiger; Gobel, Wilhelm; Muller, Eberhard; and Konter, Wolfgang, 4,452,947, Cl. 525-194.000.
Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, 4,452,834, Cl. 427-379.000.
Schmidt, Adolf; and Roos, Ernst, 4,452,737, Cl. 260-192.000.
Sehnem, Hans P., 4,452,992, Cl. 560-21.000.
Stawitz, Josef, 4,452,742, Cl. 260-367.000.
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Goldberg, Edward M.; and Bazell, Seymour, 4,452,254, Cl. 128-785.000.
Beales, Keith J.; Duncan, William J.; Dunn, Anthony G.; and Newns, George R., to British Telecommunications. Graded index optical fibres. 4,452,508, Cl. 350-96.310.
Beatrice Foods Co.: *See*—
Schoenleber, Donald; and Mattia, James A., 4,452,399, Cl. 229-72.000.
Beblavi, James C.; and Williams, Laurence O., to Martin Marietta Corporation. Magnetically actuated valve. 4,452,423, Cl. 251-65.000.
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Dunn, Terry S.; Montgomery, David B.; and Williams, Joel L., 4,452,679, Cl. 204-164.000.
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Puntener, Alois; Koller, Josef; and Beffa, Fabio, 4,452,602, Cl. 8-404.000.
Beisel, Robert H.: *See*—
Seng, Mary L.; Wanfried, Judith A.; and Beisel, Robert H., 4,451,933, Cl. 2-202.000.
Belanger, Homer J.; and Patacca, Angelo M., to United Technologies Corporation. Containment structure. 4,452,563, Cl. 415-9.000.
Belanger, Patrice C.; Dufresne, Claude; Gillard, John W.; and Williams, Haydn W. R., to Merck Frosst Canada, Inc. Process for preparing substituted phenylalkenoic acids. 4,453,005, Cl. 562-492.000.
Belavitch, Alphonse L.: *See*—
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Bell & Howell Company: *See*—
Di Gianfilippo, Dominic J.; and Parker, Robert R., 4,452,518, Cl. 353-25.000.
Bell, Malcolm R., to Sterling Drug Inc. 1-Ethenyl-6-(4-phenyl)-3,4,9,9a-tetrahydro-9a-methyl-6H-naptho[2,3-c]pyrazoles. 4,452,988, Cl. 548-369.000.
Bell, Stanley C.: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
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Goodrich, Robert R.; Krumreich, Charles L.; and O'Connor, Robert J., 4,451,948, Cl. 7-107.000.
Travis, George W., 4,453,133, Cl. 330-149.000.
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Belttary, Harold E.: *See*—
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Amin, Kamal E., 4,452,389, Cl. 228-203.000.
Moore, Robert G., Jr., 4,452,207, Cl. 123-440.000.
Benedikt, George M., to B. F. Goodrich Company, The. Process for the vapor phase chlorosulfonation of polyolefins in the presence of finely divided inorganic materials. 4,452,953, Cl. 525-344.000.
Benefice, Sylvie: *See*—
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Benham, Albert A., to Champion International Corporation. Display carton. 4,452,355, Cl. 206-45.310.
Bennett, Jeffrey H., to Northern Telecom Limited. Switched-capacitor stage with differential output. 4,453,130, Cl. 330-51.000.
Bennett, Jeffrey H., to Northern Telecom Limited. Switched-capacitor variable equalizer. 4,453,143, Cl. 333-28.00R.
Benson, Henry E.; and Koehler, Raymond A., to UOP Inc. Method and apparatus for making plastic screen panels. 4,452,656, Cl. 156-174.000.
Beranek, Mark W.: *See*—
Gibbard, Henry F.; Krug, William P.; Darling, Stephen D.; and Beranek, Mark W., 4,452,868, Cl. 429-21.000.
Berger, Jean L.; and Descure, Pierrick, to Thomson-CSF. Color television camera. 4,453,177, Cl. 358-44.000.
Berger, Raymond; de Cachard, Maurice; Gouzy, Andre ; and Trombe, Felix, to Commissariat a l'Energie Atomique. Modular cold generating apparatus. 4,452,051, Cl. 62-467.000.
Bergman, Gunnar B., to Seatek Corporation. Method and apparatus for suppressing heave in a floating structure. 4,452,165, Cl. 114-125.000.
Bergner, Arndt: *See*—
Leibhard, Erich; Herb, Armin; Bergner, Arndt; and Lang, Gusztav, 4,452,285, Cl. 141-392.000.
Bergstrom, Jerice: *See*—
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Bergstrom, Jon; and Bergstrom, Jerice. Puzzle game. 4,452,455, Cl. 273-155.000.
Bergwerksverband GmbH: *See*—
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Berkowitz, Edward H., to Varian Associates, Inc. Temperature control of a workpiece under ion implantation. 4,453,080, Cl. 250-443.100.
Berland, Craig A., to General Motors Corporation. Compact dual spark internal combustion engine. 4,452,198, Cl. 123-310.000.
Bernier, William E.; and Pigos, Charles R., to International Business Machines Corporation. Reduced electrode wear in electrolytic printing by pH control of the print reaction zone. 4,453,171, Cl. 346-165.000.
Bernstein, Kurt: *See*—
Mattsson, Soren; Holmer, Nils-Gunnar; Bernstein, Kurt; Ulmsten, Ulf; Astedt, Birger; and Jacobsson, Lars, 4,453,075, Cl. 250-363.00S.
Berrios, Rafael; and Belttary, Harold E., to Challenger Caribbean Corporation; and Commander Electrical Equipment, Inc. Louvered arc chute. 4,453,055, Cl. 200-147.00R.
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Schlachet, Hugo, 4,452,615, Cl. 55-227.000.
Best Energy Systems For Tomorrow, Inc.: *See*—
Paul, Steven J., 4,453,207, Cl. 363-139.000.
Bestobell (U.K.) Ltd.: *See*—
Webb, John W. M., 4,452,427, Cl. 251-366.000.
Betriebsforschungsinstitut VDEh Institut fur angewandte Forschung GmbH: *See*—
Bohlander, Peter; and Hippler, Heinz-Peter, 4,453,083, Cl. 250-561.000.
Betz Laboratories, Inc.: *See*—
Snyder, William R.; and Feuerstein, Diane, 4,452,704, Cl. 210-701.000.
Beugin, Michel; and Marriere, Jean-Pierre, to U.S. Philips Corporation. Record player with spring-assisted pick-up arm return. 4,453,244, Cl. 369-225.000.
Bewley, Wilbur C., Jr.: *See*—
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Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,452,797, Cl. 424-250.000.
Bezborodko, Joseph. Mirrored wall system. 4,452,022, Cl. 52-311.000.
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Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.
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Bialkowski, Gunter: *See*—
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de Nora, Oronzio; and Bianchi, Giuseppe, 4,452,683, Cl. 204-196.000.
Bigelow, Donald O., to Sperry Corporation. Cam guide operating mechanism for roll baling machine. 4,452,133, Cl. 100-88.000.
Bindin, Peter J., to Chloride Silent Power Ltd. Alkali metal cells and batteries and the manufacture thereof. 4,452,871, Cl. 429-104.000.
Bio-Melktechnik Hoefelmayr & Co.: *See*—
Hoefelmayr, Tilman; and Maier, Jakob, 4,452,176, Cl. 119-14.170.
Birbara, Philip J.; Galasso, Francis S.; and Veltri, Richard D., to United Technologies Corporation. Carbon dioxide conversion system for oxygen recovery. 4,452,676, Cl. 204-129.000.
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Christensen, Elmer; and Steffes, Frank J., 4,452,694, Cl. 209-672.000.
Blake, Donald: *See*—
Waddington, Clive; Lagasse, Normand; Kuintzle, Charles, Jr.; and Blake, Donald, 4,452,037, Cl. 60-39.080.
Blakemore, Richard P.; and Wolfe, Ralph S. Culture medium and conditions for growth of magnetic bacteria. 4,452,896, Cl. 435-253.000.
Blancou, Hubert; Benefice, Sylvie; and Commeyras, Auguste. Process for preparing polyfluorinated alcohols. 4,452,852, Cl. 568-842.000.
Blaschke, Alfred: *See*—
Eichberger, Walter; and Blaschke, Alfred, 4,452,831, Cl. 427-348.000.
Blasius, Ewald; and Nilles, Karl-Heinz, to Kernforschungszentrum Karlsruhe GmbH. Process for the extraction of cesium ions from aqueous solutions using an adduct compound containing a macrocyclical polyether and an inorganic heteropoly acid. 4,452,702, Cl. 210-638.000.
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Rynik, Milan; and Nickel, John, 4,452,114, Cl. 83-100.000.
Bloch, Einer; and Strindberg, Leif J. E., to Aktiebolaget Electrolux. Door latching device. 4,452,475, Cl. 292-31.000.
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Bockhorst, Rhea W.; and Elenburg, Jimmie H., to Conoco Inc. Push drill guidance indication apparatus. 4,452,075, Cl. 73-151.000.
Boden, Richard M.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Alkyl-4-cyclooctenyl carbonates and uses thereof in augmenting or enhancing the aroma of perfume compositions, colognes and perfumed articles. 4,452,730, Cl. 252-522.00R.
Boeder, Charles W., to Minnesota Mining & Manufacturing Company. Novel adhesive compositions. 4,452,955, Cl. 525-518.000.
Boehringer Ingelheim KG: *See*—
Losel, Walter; Roos, Otto; Reichl, Richard; and Kuhn, Franz-Josef, 4,452,789, Cl. 424-258.000.
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Hamm, Robert A., 4,452,657, Cl. 156-198.000.
Nordlund, Lester H., 4,453,114, Cl. 318-376.000.
Boetto, Charles, to International Harvester Co. Folding frame implement with wing mounted support stand. 4,452,318, Cl. 172-311.000.
Boglov, Alexandr M.: *See*—
Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.
Bohlander, Peter; and Hippler, Heinz-Peter, to Betriebsforschungsinstitut VDEh Institut fur angewandte Forschung GmbH. Apparatus for the determination of the position of a surface. 4,453,083, Cl. 250-561.000.
Boichenko, Oleg L.: *See*—
Vishnevsky, Valdimir S.; Kartashev, Igor A.; Lavrinenko, Vyacheslav V.; Boichenko, Oleg L.; Koval, Vitaly S.; Golovyashin, Jury V.; Serov, Nikolai F.; Shinkarenko, Leonid I.; and Jurash, Oleg G., 4,453,103, Cl. 310-323.000.
Boivie, Richard H., to Bell Telephone Laboratories, Incorporated. Directory lookup method and apparatus. 4,453,217, Cl. 364-300.000.
Bolich, Raymond E., Jr., to Procter & Gamble Company, The. Shampoo compositions. 4,452,732, Cl. 252-547.000.
Bolon, Donald A.; and Hallgren, John E., to General Electric Company. Synthesis of polycarbonate from dialkyl carbonate and bisphenol diester. 4,452,968, Cl. 528-271.000.
Boma, Dennis G.: *See*—
Wanatowicz, Edward W., Jr.; and Boma, Dennis G., 4,453,063, Cl. 200-340.000.
Bonga, Benno, to Ateliers des Charmilles S.A. Apparatus for orienting the wire electrode support and guide member and the machining fluid nozzle of a travelling wire EDM apparatus. 4,453,070, Cl. 219-69.00W.
Bonnet, Ludwig: *See*—
Hiltebrandt, Siegfried; and Bonnet, Ludwig, 4,452,546, Cl. 403-349.000.
Bonta, Ivan L.: *See*—
Kort, Willy J.; Bonta, Ivan L.; Adolfs, Martinus J. P.; and Westbroek, Dirk L., 4,452,794, Cl. 424-240.000.
Bontje, Theodorus P. M.; Schuldink, Gerrit; Heetbrink, Gerrit H.; de Putter, Warner J.; and Kok, Bernardus H., to Wavin B. V. Device and a method for recovering heat from the soil. 4,452,303, Cl. 165-142.000.
Borges, Gary G.; and Rebholz, James H. Laminated lidding material. 4,452,842, Cl. 428-195.000.
Boschetti, Egisto, to Pharmindustrie. Hydrophilic copolymers based on N-[tris(hydroxymethyl)methyl]-acrylamide, processes for their preparation, aqueous gels of said copolymers and their use as ion exchangers. 4,452,916, Cl. 521-38.000.

Bose, Bimal K., to General Electric Company. Scalar decoupled control for an induction machine using current control. 4,453,116, Cl. 318-727.000.

Boudreau, Daniel A., to Honeywell Information Systems Inc. Multiple comparison circuitry for providing a software error trace signal. 4,453,093, Cl. 307-440.000.

Bourke, Robert E., to NBS, Inc. Camping trailer and automobile-trailer combination. 4,452,465, Cl. 280-403.000.

Bouwknegt, Jan; Dieleman, Louis F. A.; and Marneffe, Antonius C., to U.S. Philips Corporation. Device for the simultaneous positioning of a plurality of electrical and/or electronic parts on a printed circuit board. 4,452,557, Cl. 414-118.000.

Bowen, Thomas N. E.; Butler, Peter; and Palluel, Auguste L. L., to Imperial Chemical Industries PLC. Crosslinkable coating compositions cured by a specified blend of alkylarylsulphonic acids. 4,452,945, Cl. 525-161.000.

Boxlox, Inc.: *See*—
West, Robert A., 4,452,390, Cl. 232-4.00R.

Boynton, William W.; and Weber, Charles J., to International Business Machines Corporation. Printer subsystem with dual cooperating microprocessors. 4,452,136, Cl. 101-93.050.

Brackman, William D., Jr.: *See*—
Huang, Rex H.; Hale, John R.; and Brackman, William D., Jr., 4,453,193, Cl. 361-98.000.

Bradley, Gary W.: *See*—
Martin, Larry D.; and Bradley, Gary W., 4,452,643, Cl. 134-3.000.

Bradshaw, Bruce W.; and Clive, Robert N., to Jackson Jordan, Inc. Railroad track tamper level control system. 4,452,146, Cl. 104-7.00R.

Brakus, Bogdan, to Siemens Aktiengesellschaft. DC/AC Converter with shunt regulated load. 4,453,205, Cl. 363-8.000.

Brand, Leonard J.; and Nadelson, Jeffrey, to Sandoz, Inc. Isoxazolyl indolamines as intermediates. 4,453,001, Cl. 548-466.000.

Brand, Peter, to Hauni-Werke Korber & Co. KG. Apparatus for transporting and classifying discrete articles of the tobacco processing industry. 4,452,255, Cl. 131-282.000.

Brandmaier, C. Edward: *See*—
Dennis, Edmund G.; and Brandmaier, C. Edward, 4,452,031, Cl. 53-586.000.

Brasz, Albert J. H.; Nagtzaam, Nicolaas P.; and Bronke, Cornelis, to Stamicarbon B.V. Process for the preparation of polymer melts which are substantially free of volatile components. 4,452,977, Cl. 528-500.000.

Bratsky, Fedor F.: *See*—
Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.

Bredenkamp, Gordon L., to Crucible Societe Anonyme. High frequency welding apparatus. 4,453,073, Cl. 219-130.100.

Bredow, Walter, to C. Behrens AG. Machine for treating plate-shaped workpieces especially a cutting press. 4,452,115, Cl. 83-157.000.

Brehm, Jurgen: *See*—
Wendler, Manfred; Marcinkowski, Jurgen; and Brehm, Jurgen, 4,452,661, Cl. 156-428.000.

Breining, Tibor: *See*—
Hermecz, Istvan; Breining, Tibor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Kokosi, Jozsef, 4,452,982, Cl. 544-282.000.

Bresak, Ann F.; and Tolgyesi, Eva, to Gillette Company, The. Hair setting composition and method. 4,452,261, Cl. 132-7.000.

Brettel, Hans; Dietz, Wolfgang; Roder, Ulrich; Scherg, Christof; and Waidelich, Wilhelm, to Gesellschaft fur Strahlen- und Umweltforschung mbH. Ultrasonic diagnosis device. 4,452,083, Cl. 73-607.000.

Brickner, Louis D.; Rickmers, Clifford P.; and Donovan, Bobby B., to Rockwell International Corporation. Self-adjusting fence for motorized saw unit. 4,452,117, Cl. 83-467.00R.

Brier, Gordon L., to Eli Lilly and Company. Synergistic antibacterial compositions and method of treatment of infections caused by multiple antibiotic-resistant organisms. 4,452,778, Cl. 424-114.000.

Bristol, James A.; and Badger, Edward W., to Warner-Lambert Company. Substituted 8-phenylxanthines. 4,452,788, Cl. 424-253.000.

British Petroleum Company Limited, The: *See*—
Ball, William J.; and Stewart, David G., 4,452,907, Cl. 502-60.000.

British Petroleum Company p.l.c., The: *See*—
Ball, William J.; and Stewart, David G., 4,452,908, Cl. 502-61.000.

British Telecommunications: *See*—
Beales, Keith J.; Duncan, William J.; Dunn, Anthony G.; and Newns, George R., 4,452,508, Cl. 350-96.310.

Britt, Ronald H., to Lundy Electronics & Systems, Inc. OCR Page reader. 4,453,268, Cl. 382-50.000.

Brodsky, Gregory I.; and Scheve, Bernard J., to Hercules Incorporated. Reinforcing process. 4,452,855, Cl. 428-290.000.

Bronke, Cornelis: *See*—
Brasz, Albert J. H.; Nagtzaam, Nicolaas P.; and Bronke, Cornelis, 4,452,977, Cl. 528-500.000.

Bronke, Henry R.: *See*—
Kolvek, Robert E.; Bronke, Henry R.; Foit, Nicholas W., Jr.; and Kish, Robert J., 4,452,749, Cl. 264-30.000.

Brooks, Robert T., to Baker International Corporation. Liquid hydrocarbon burning method and apparatus. 4,452,583, Cl. 431-202.000.

Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft: *See*—
Sunkel, Manfred, 4,452,097, Cl. 74-501.00R.

Brother Kogyo Kabushiki Kaisha: *See*—
Yoshida, Noriyuki, 4,453,115, Cl. 318-434.000.

Brouwer, Frans, to ESAB, North America, Inc. Optical pattern tracing system. 4,453,084, Cl. 250-202.000.

Brown, Boveri & Cie A.G.: *See*—
Langpape, Reinhart, 4,452,870, Cl. 429-104.000.

Brown, Boveri & Co. AG: *See*—
Brown, Richard W.; and Winkler, Gary, 4,453,156, Cl. 340-310.00R.

Brown, Jerry L., to Westinghouse Electric Corp. Track switch having power rails with interdigitated end members. 4,453,051, Cl. 191-22.00C.

Brown, Michael; and Johnson, David W., to Northern Telecom Limited. Pushbutton switch and integral lamp for telephone dials. 4,453,062, Cl. 200-314.000.

Brown, Richard W.; and Winkler, Gary, to Brown, Boveri & Co. AG. Load control receiver and method of operation. 4,453,156, Cl. 340-310.00R.

Brown, Thomas A.: *See*—
Peil, William; Brown, Thomas A.; and Dissosway, Marc A., 4,453,094, Cl. 307-451.000.

Brown & Williamson Tobacco Corporation: *See*—
Porenski, Harry S.; and Sachleben, Leroy R., 4,452,260, Cl. 131-364.000.

Browning, Jess. Material handling apparatus. 4,452,171, Cl. 118-58.000.

Bruel, Michel; and Spinelli, Philippe, to Commissariat a l'Energie Atomique. Process for doping semiconductors. 4,452,644, Cl. 148-1.500.

Bruna, Bernhard, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Supporting arrangement for electroacoustic transducers. 4,453,045, Cl. 179-146.00R.

Brunelle, Daniel J., to General Electric Company. Inhibition of estercarbonate interchange in polyester-polycarbonate blends. 4,452,932, Cl. 524-110.000.

Brunelle, Daniel J., to General Electric Company. Catalytic process for preparing poly(alkylene dicarboxylates) and catalysts for use therein. 4,452,970, Cl. 528-279.000.

Bruning, Werner: *See*—
Langensiepen, Gert; and Bruning, Werner, 4,452,370, Cl. 220-93.000.

Brynestad, Jorulf; and Bamberger, Carlos E., to United States of America, Energy. Method for removing oxide contamination from titanium diboride powder. 4,452,767, Cl. 423-297.000.

Bubley, Henry J.; and Green, Melvin E., to American Screen Printing Equipment Co. Screen printing frame. 4,452,138, Cl. 101-127.100.

Buchholz, Jeffrey C.: *See*—
Eesley, Gary L.; Buchholz, Jeffrey C.; and Sell, Jeffery A., 4,452,071, Cl. 73-52.000.

Bucker, Heinrich: *See*—
Icking, Friedrich; and Bucker, Heinrich, 4,452,268, Cl. 137-240.000.

Buckley, William D., to Perkin-Elmer Corporation, The. X-Ray lithography apparatus and method of use. 4,453,262, Cl. 378-034.000.

Buckner, Robert K., to Dresser Industries, Inc. Packer sealing assembly. 4,452,463, Cl. 277-120.000.

Buhler, Gunter: *See*—
Egbers, Gerhard; Schuler, Bernhard; Seidel, Adolf; and Buhler, Gunter, 4,452,053, Cl. 66-123.000.

Bundschuh, Robert L. Pump dispenser with one-piece stretchable biasing member and valve. 4,452,379, Cl. 222-207.000.

Bundy, Gordon L.: *See*—
Johnson, Roy A.; Lin, Chiu-Hong; and Bundy, Gordon L., 4,452,986, Cl. 548-336.000.

Bunker, Nathan S.; and Wong, Rayman Y., to Stauffer Chemical Company. Insect repellent: N,N-diethyl-2-(4-thiochromanyloxy)-propionamide. 4,452,810, Cl. 424-275.000.

Burden, Stephen J. Ceramic composition. 4,452,906, Cl. 501-87.000.

Burlett, Donald J.: *See*—
Parker, Dane K.; and Burlett, Donald J., 4,452,939, Cl. 524-551.000.

Burow, Kenneth W., Jr.; and Johnson, George W., to Eli Lilly and Company. Urea herbicides. 4,452,631, Cl. 71-120.000.

Burrage, Lawrence M., to McGraw-Edison Company. Dielectric fluid tank. 4,453,197, Cl. 361-272.000.

Burroughs Corporation: *See*—
Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., 4,453,212, Cl. 364-200.000.
Loskorn, Richard A., 4,453,228, Cl. 364-900.000.
Osman, Fazil I., 4,453,251, Cl. 371-51.000.

Burroughs, W. Stanley. Flag mounting device. 4,452,167, Cl. 116-173.000.

Burton, James S.: *See*—
Marks, Robert E.; Burton, James S.; Elvidge, John A.; and Shah, Saresh, 4,452,783, Cl. 424-177.000.

Busby, Michael G.: *See*—
Kou, Abraham H.; Busby, Michael G.; Polenske, Errol E.; and Peickert, Wilfried R., 4,452,090, Cl. 73-861.280.

Bush, Robert D.; and Cowles, Dean S., to General Instrument Corporation. Linear feel keyswitch with hysteresis. 4,453,198, Cl. 361-288.000.

Butler, Donald E., to Warner-Lambert Company. 1-Aroyl-5-oxo-2-pyrrolidinepropanoic acids and related esters. 4,452,990, Cl. 548-543.000.

Butler, James R.: *See*—
Watson, James M.; Butler, James R.; and Victor, Mark, 4,452,975, Cl. 528-493.000.

Butler, Peter: *See*—
Bowen, Thomas N. E.; Butler, Peter; and Palluel, Auguste L. L., 4,452,945, Cl. 525-161.000.

Byrne, Martin A.; and Lupinski, John H., to United States of America, Energy. Amorphous metal composites. 4,452,938, Cl. 524-439.000.

C. A. Weidmuller GmbH & Co.: *See*—
Conrad, Horst; Kretzschmar, Wolfgang; and Murray, Peter E., 4,452,504, Cl. 339-263.00R.
C. Behrens AG: *See*—
Bredow, Walter, 4,452,115, Cl. 83-157.000.
Calabro, Francis C., to Union Corporation, The. Attachment apparatus. 4,452,555, Cl. 410-53.000.
Caldwell Manufacturing Company: *See*—
Deal, Stephen M., 4,452,012, Cl. 49-181.000.
Calgon Corporation: *See*—
Ralston, Paul H.; Whitney, Sandra L.; and Walker, Jerry L., 4,452,703, Cl. 210-698.000.
Callahan, James L.: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., 4,453,006, Cl. 562-545.000.
Camco, Incorporated: *See*—
Pringle, Ronald E.; and Eatwell, William D., 4,452,310, Cl. 166-319.000.
Canada, Her Majesty the Queen in Right of, as Represented by the Minister of National Defence: *See*—
Matthews, James R.; and May, Glen A., 4,451,977, Cl. 29-748.000.
Canada, National Research Council of: *See*—
Steck, Warren F.; Underhill, Edward W.; Chisholm, Melvin D.; and Bailey, Berton K., 4,452,006, Cl. 43-122.000.
Canadian Patents and Development Limited: *See*—
Lo, Gerald J. P.; Cuhaci, Misel; and Hitchcock, N. S., 4,453,257, Cl. 375-60.000.
Molday, Robert S., 4,452,773, Cl. 424-1.100.
Cannella, Vincent D.: *See*—
Izu, Masatsugu; and Cannella, Vincent D., 4,451,970, Cl. 29-574.000.
Canon Kabushiki Kaisha: *See*—
Arao, Kozo, 4,453,170, Cl. 346-160.000.
Hirohata, Michio; and Ikari, Hideo, 4,452,521, Cl. 354-195.100.
Kohayakawa, Yoshimi, 4,452,517, Cl. 351-206.000.
Motoyoshi, Junichi, 4,453,167, Cl. 346-76.0PH.
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, 4,452,522, Cl. 354-289.120.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,452,874, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,452,875, Cl. 430-57.000.
Cantada, Edilberto; and Spasiano, Anthony D., to Singer Company, The. Basting stitch mechanism. 4,452,157, Cl. 112-221.000.
Capek, Raymond G.; and Garrett, Elgie, to Zenith Radio Corporation. Bleeder resistor for antenna isolator. 4,453,153, Cl. 338-309.000.
Carl Dunmon & Associates, Inc.: *See*—
Sukolics, Ronald D., 4,452,029, Cl. 52-747.000.
Carlomagno, William D., to Raychem Corporation. Method for installing a sleeve on a substrate. 4,451,965, Cl. 29-450.000.
Carlson, David E.; and Williams, Brown F., to RCA Corporation. Photocell utilizing a wide-bandgap semiconductor material. 4,453,173, Cl. 357-30.000.
Carlson, William G.; Gupta, Tapan K.; and Sweetana, Andrew S., Jr., to Westinghouse Electric Corp. Voltage stable nonlinear resistor containing minor amounts of aluminum, boron and selected alkali metal additives. 4,452,728, Cl. 252-518.000.
Carlson, William G.; Gupta, Tapan K.; and Sweetana, Andrew S., Jr., to Westinghouse Electric Corp. Voltage stable nonlinear resistor containing minor amounts of aluminum and boron. 4,452,729, Cl. 252-518.000.
Carolinch Company, The: *See*—
Palnik, Karl, 4,452,684, Cl. 204-206.000.
Carpenter & Associates: *See*—
Schulze, Everett E., Jr., 4,452,444, Cl. 272-65.000.
Carpenter, Keith H., to General Motors Corporation. Motor armature shaft endplay reduction apparatus. 4,452,541, Cl. 384-223.000.
Carpentier, Alain; and Lane, Ernest, to American Hospital Supply Corporation. Supra-annular aortic valve. 4,451,936, Cl. 3-1.500.
Carroll, William G.; and Farley, Peter, to Imperial Chemical Industries PLC. Polymer-modified polyols. 4,452,923, Cl. 521-167.000.
Carson, William G., to Goodyear Tire & Rubber Company, The. Increasing the reactivity of coupling homopolymers. 4,452,952, Cl. 525-340.000.
Carstens, Ronald, to Key Tech Corporation. Non-skid surface compositions for paper products. 4,452,723, Cl. 252-313.00S.
Cartwright, William F.; and Cornell, Alan, to Consolidated Cigar Corp. Treatment for natural leaf tobacco wrapper. 4,452,257, Cl. 131-310.000.
Caruth, John: *See*—
Chance, Slim; and Gray, William T., 4,452,120, Cl. 84-306.000.
Casey, Donald J.; and Roby, Mark S., to American Cyanamid Company. Poly(glycolic acid)/poly(oxyethylene) triblock copolymers and method of manufacturing the same. 4,452,973, Cl. 528-354.000.
Cashin Systems Corp.: *See*—
Dennis, Edmund G.; and Brandmaier, C. Edward, 4,452,031, Cl. 53-386.000.
Cassella Aktiengesellschaft: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,452,797, Cl. 424-250.000.
Castro, Horacio: *See*—
Castro, Marcelo; and Castro, Horacio, 4,453,041, Cl. 179-84.00C.
Castro, Marcelo; and Castro, Horacio. Method and apparatus for processing coded information received through a telephone line during the non-active intervals of a ringing period. 4,453,041, Cl. 179-84.00C.
Cataldo, Roy S., to General Motors Corporation. Fuel injector. 4,452,396, Cl. 239-223.000.
Caule, Elmer J., to Olin Corporation. Copper and copper alloy coating. 4,452,650, Cl. 148-31.500.
Cayton, William D. Seven balls and billiard rack therefor. 4,452,450, Cl. 273-22.000.
Celanese Corporation: *See*—
Choe, Eui W.; and Conciatori, Anthony B., 4,452,971, Cl. 528-336.000.
Choe, Eui W.; and Conciatori, Anthony B., 4,452,972, Cl. 528-336.000.
Collins, George L.; and Thomas, Norman W., 4,452,601, Cl. 8-115.500.
Conciatori, Anthony B.; Choe, Eui W.; and Hall, Henry K., Jr., 4,452,967, Cl. 528-207.000.
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Kohn, Rachel S., 4,452,639, Cl. 106-205.000.
Powers, Edward J.; Walsh, Thomas E.; and Stewart, Donald R., 4,452,929, Cl. 523-403.000.
Century Electric, Inc.: *See*—
Phillips, Graham R.; and Fisher, Marvin J., 4,453,118, Cl. 318-779.000.
Chakravarty, M. B.: *See*—
Rajaram, Bojji; Bhat, A. R.; and Chakravarty, M. B., 4,452,392, Cl. 238-349.000.
Challenger Caribbean Corporation: *See*—
Berrios, Rafael; and Belttary, Harold E., 4,453,055, Cl. 200-147.00R.
Chamberlain Manufacturing Corporation: *See*—
Skar, Robert C., 4,453,269, Cl. 455-129.000.
Champion International Corporation: *See*—
Benham, Albert A., 4,452,355, Cl. 206-45.310.
Chance, Britton; Leigh, John S.; and Eleff, Scott M. NMR System for the non-invasive study of phosphorus metabilism. 4,452,250, Cl. 128-653.000.
Chance, Dudley A.; and Kopcsay, Gerard V., to International Business Machines Corporation. LSI Chip carrier with buried repairable capacitor with low inductance leads. 4,453,176, Cl. 357-51.000.
Chance, Slim; and Gray, William T., to Caruth, John, a part interest. Tuning peg assembly. 4,452,120, Cl. 84-306.000.
Chang, Biau-Hung, to Ashland Oil, Inc. Use of mixed metal catalysts in the hydroformylation of olefins to produce linear aldehydes and alcohols. 4,453,019, Cl. 568-454.000.
Chang, Sang B. Labelling machine. 4,452,667, Cl. 156-384.000.
Chao, Robert L., to Supertex, Inc. Integrated memory circuits. 4,453,235, Cl. 365-189.000.
Charcon Tunnels Limited: *See*—
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Charles of the Ritz Group Ltd.: *See*—
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Inoue, Hiromichi; Inukai, Takashi; and Goto, Yasuyuki, 4,452,719, Cl. 252-299.630.

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Bindin, Peter J., 4,452,871, Cl. 429-104.000.

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Jurgens, Rainer, 4,452,322, Cl. 175-107.000.
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Christine, William C., to Trinity Associates. Gussetted bottom pouch. 4,452,378, Cl. 222-107.000.

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Mazur, Richard J.; Tomczak, Lawrence W.; Momin, Salim A.; and Killen, Howard R., 4,452,201, Cl. 123-339.000.

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Leppard, David G., 4,452,884, Cl. 430-551.000.
Turner, George F. A. M.; and Hammond, Martin G., 4,452,527, Cl. 355-45.000.

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Erzinger, Paul, 4,452,608, Cl. 8-524.000.
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Davis, Malcolm F.; Linser, Charles M.; and Resnick, Brian J., 4,453,221, Cl. 364-513.000.
Williams, Mark A., 4,452,710, Cl. 252-33.600.

Ciomo, George C., to Stauffer Chemical Company. Alkyl vanadate color improvement. 4,452,724, Cl. 260-429.00R.

Cipris, Divna; and Walsh, Arthur T., to Allied Corporation. Process for the activation of nickel electrodes via the electrochemical deposition of selenium and/or tellurium. 4,452,675, Cl. 204-56.00R.

Cities Service Company: *See—*
Richers, David M., 4,452,091, Cl. 73-864.520.
Withjack, Eric M., 4,452,234, Cl. 126-450.000.

Clarion Co., Ltd.: *See—*
Takai, Kazuki, 4,452,409, Cl. 242-204.000.

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Clausen, Victor H.; and Kaplan, Paul, to H. B. Fuller Company. Web reinforced with string-type adhesive and method of manufacturing same. 4,452,837, Cl. 428-35.000.

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John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., 4,452,152, Cl. 110-235.000.

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Cloverline, Inc.: *See—*
Leopoldi, Norbert; and Heinrich, William P., 4,452,243, Cl. 128-314.000.

CMI Models & Development Corp.: *See—*
Prosen, Gildo G., 4,452,385, Cl. 224-321.000.

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Berrios, Rafael; and Belttary, Harold E., 4,453,055, Cl. 200-147.00R.

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Baudoin, Andre, 4,452,182, Cl. 122-32.000.
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Bruel, Michel; and Spinelli, Philippe, 4,452,644, Cl. 148-1.500.

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Noel, Jean P., 4,452,058, Cl. 70-137.000.

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Connolly, James M.; Morley, Robert G.; and Ashton, W. Ronald, to Landwide Foods, Inc. Packaged frozen food product. 4,452,823, Cl. 426-115.000.

Conoco Inc.: *See—*
Bockhorst, Rhea W.; and Elenburg, Jimmie H., 4,452,075, Cl. 73-151.000.
Radd, Frederick J.; and Haden, Elard L., 4,452,325, Cl. 175-410.000.

Conrad, Horst; Kretzschmar, Wolfgang; and Murray, Peter E., to C. A. Weidmuller GmbH & Co. Cross connection link for establishing the same phase between electrical terminal blocks. 4,452,504, Cl. 339-263.00R.

Conrad, Ulrich, to Daimler-Benz Aktiengesellschaft. Filter for diesel fuel. 4,452,697, Cl. 210-172.000.

Consolidated Cigar Corp.: *See—*
Cartwright, William F.; and Cornell, Alan, 4,452,257, Cl. 131-310.000.

Consolidated Papers, Inc.: *See—*
Holt, Sherwood G., 4,452,833, Cl. 427-356.000.

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Anderson, James W., 4,452,021, Cl. 52-311.000.

Continental Group, Inc., The: *See—*
Roth, Donald J., 4,452,368, Cl. 220-67.000.

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Freeman, Bruce A., 4,452,381, Cl. 222-465.00R.

Cooper, Gary D. Fire protection for wood shingle roof. 4,453,155, Cl. 340-289.000.

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Tiller, Charles R., 4,452,079, Cl. 73-488.000.

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Cartwright, William F.; and Cornell, Alan, 4,452,257, Cl. 131-310.000.
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Cosden Technology, Inc.: *See*—
Watson, James M.; Butler, James R.; and Victor, Mark, 4,452,975, Cl. 528-493.000.
Coue, Maurice E. L., to Huret et ses Fils. Guiding and actuating mechanism in particular for a bicycle derailleur. 4,452,593, Cl. 474-80.000.
Covell, L. David: *See*—
Klieman, Charles H.; and Densmore, Richard M., 4,452,357, Cl. 206-339.000.
Covington, Roger G., to Eastman Kodak Company. Retaining rings for optical disc assemblies. 4,453,246, Cl. 369-284.000.
Cowles, Dean S.: *See*—
Bush, Robert D.; and Cowles, Dean S., 4,453,198, Cl. 361-288.000.
Coyle, Edward L.; Maurer, Herman J.; and Cochran, Gary L., to J. I. Case Company. Quick coupler assembly. 4,452,560, Cl. 414-723.000.
Craelius AB: *See*—
Eriksson, Sune W., 4,452,321, Cl. 175-46.000.
Crase, Gary M., to Smith International Inc. Tubular safety joint for drill strings. 4,452,472, Cl. 285-3.000.
Creative Fastening Methods, Inc.: *See*—
Middleton, Charles F., Jr.; and Guidi, Arthur J., 4,453,072, Cl. 219-86.230.
Creusot-Loire: *See*—
Baudoin, Andre, 4,452,182, Cl. 122-32.000.
Cringle, David C.: *See*—
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Lissalde, Francois-Claude; and Esteve, Jacques, 4,453,129, Cl. 324-429.000.
Crooks, James W., Jr., to General Dynamics Electronics Division. Orbiting objective lens telescope system and method. 4,453,224, Cl. 364-525.000.
Crosfield Electronics Limited: *See*—
Isherwood, Jeffrey; and Morris, Delwyn L., 4,452,140, Cl. 101-181.000.
Croswhite, Howard L., to Ford Motor Company. Three speed overdrive transaxle assembly. 4,452,099, Cl. 74-695.000.
Crucible Societe Anonyme: *See*—
Bredenkamp, Gordon L., 4,453,073, Cl. 219-130.100.
Csekes, Jozsef, to Medicor Muvek. Loading device for physiological examinations. 4,452,445, Cl. 272-73.000.
Cubberly, Walter E., Jr.: *See*—
Gavignet, Alain H.; and Cubberly, Walter E., Jr., 4,452,076, Cl. 73-155.000.
Cubemco, Inc.: *See*—
Mattia, Manlio M., 4,452,612, Cl. 55-25.000.
Cuhaci, Misel: *See*—
Lo, Gerald J. P.; Cuhaci, Misel; and Hitchcock, N. S., 4,453,257, Cl. 375-60.000.
Cullen, Ronald A., to Plessey Overseas Limited. Apparatus for loading parts into bodies. 4,452,352, Cl. 198-482.000.
Cummins, Richard W.; and Baum, Burton M., to FMC Corporation. Mixed trialkylphosphine oxides as functional fluids. 4,452,716, Cl. 252-78.500.
Cusack, Robert F., to Valeron Corporation, The. Touch probe. 4,451,987, Cl. 33-174.00L.
Custin, James R., to Gardner Bender, Inc. Conduit bender with bend angle indicators. 4,452,064, Cl. 72-459.000.
Cutter Laboratories, Inc.: *See*—
Ng, Paul K.; and Dobkin, Milton B., 4,452,893, Cl. 435-240.000.
Dabrowski, John E., to General Electric Company. Nickel oxide catalyst supported on magnesium for the selective ortho-alkylation of phenolic compounds with an alkane. 4,452,915, Cl. 502-328.000.
Dahl, Byron M., to Fuel Efficiency Co. Fuel mixing device. 4,452,214, Cl. 123-523.000.
Dahl, Robert S. Packaging for bakery items. 4,452,356, Cl. 206-45.320.
Dahlgren, Harold P.; Taylor, James E.; and Peters, Dwight W. Dampening fluid evaporator and method. 4,452,139, Cl. 101-148.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Inada, Junji, 4,452,030, Cl. 53-426.000.
Daimler-Benz Aktiengesellschaft: *See*—
Conrad, Ulrich, 4,452,697, Cl. 210-172.000.
Tscheplak, Ernst, 4,452,349, Cl. 192-30.00W.
Dainichi-Nippon Cables, Ltd.: *See*—
Utsumi, Atsushi; and Noguchi, Masaharu, 4,452,623, Cl. 65-3.120.
Dal Moro, Anacleto; and Pinamonti, Franco, to Montedison S.p.A. Stable, heat-resistant solutions of pesticidal carbamates. 4,452,630, Cl. 71-111.000.
Dale Electronics, Inc.: *See*—
Person, Herman R., 4,452,531, Cl. 356-28.500.
Daley, James A.; and Dore, Gregory J. Baseball board game apparatus. 4,452,453, Cl. 273-93.00R.
Daly, Christopher N.: *See*—
Money, David K.; and Daly, Christopher N., 4,453,162, Cl. 340-870.390.
Daly, Jeffery E., to Reed Rock Bit Company. Valve assembly for drill bit lubrication system. 4,452,323, Cl. 175-229.000.
D'Amelia, Ronald P.; Stroz, John J.; and Kachikian, Rouben, to Nabisco Brands, Inc. Gum base and chewing gum containing same. 4,452,820, Cl. 426-3.000.
Damson, Eckart; Moser, Winfried; and Rieger, Franz, to Robert Bosch GmbH. Combustion condition sensor. 4,452,072, Cl. 73-116.000.
Dana Corporation: *See*—
Schetter, Thomas C., 4,452,094, Cl. 74-333.000.
Daniel, James W., Jr., to Decor Noel Corporation, The. Cap and clip assembly for attachment to ornament. 4,452,836, Cl. 428-11.000.
Daniel, Nathan I. Foil stabilized monohull vessel. 4,452,166, Cl. 114-282.000.
Daniels, William R.; and Young, John S., to GTE Automatic Electric Inc. Arrangement for subscriber line ring testing. 4,453,048, Cl. 179-175.20R.
Daniels, William R.; and Young, John S., to GTE Automatic Electric Inc. Arrangement for single line testing. 4,453,049, Cl. 179-175.20R.
Danilevich, Yanush B.: *See*—
Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.
Dankwort, Rudolf C., to Sperry Corporation. Torque feedback control for two degree of freedom rate sensor. 4,452,092, Cl. 74-5.460.
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Sandhu, Mohammad A.; Dannelly, Clarence C.; and Oliver, Bernard W., Jr., 4,452,008, Cl. 47-57.600.
D'Antonio, Nicholas F. Pipeline monitoring system. 4,452,087, Cl. 73-786.000.
Darling, Stephen D.: *See*—
Gibbard, Henry F.; Krug, William P.; Darling, Stephen D.; and Beranek, Mark W., 4,452,868, Cl. 429-21.000.
Darton, Richard C.: *See*—
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Daugirda, Paul G.; and Clark, Keith R., to Rheem Manufacturing Company. Water heater tank assembly. 4,452,226, Cl. 126-373.000.
David, Constant V. Solar heat boiler. 4,452,232, Cl. 126-439.000.
David, Gerard R.; and Pincon, Daniel M. Solar cell having a grooved photosensitive surface. 4,453,030, Cl. 136-256.000.
Davidson, Douglass S.: *See*—
Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., 4,452,727, Cl. 252-518.000.
Davies, John; Mansfield, Graham J.; Tutt, Kingsley J.; and Graveling, Frederick J., to USM Corporation. Shoe machine. 4,452,057, Cl. 69-6.500.
Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., to Goodyear Tire & Rubber Company, The. Bead jamming or crimping apparatus. 4,452,660, Cl. 156-422.000.
Davis, David W.: *See*—
Adkisson, James W.; Davis, David W.; and Ishman, Paul A., 4,452,543, Cl. 400-605.000.
Davis, Eugene E., to Johnsen & Jorgenson (Plastics) Ltd. Tamper-resistant and child-resistant container and cap assembly. 4,452,363, Cl. 215-216.000.
Davis, Malcolm F.; Linser, Charles M.; and Resnick, Brian J., to Cincinnati Milacron Inc. Manipulator with adaptive velocity controlled path motion. 4,453,221, Cl. 364-513.000.
Davis, Randy C.: *See*—
Evans, Robert F.; and Davis, Randy C., 4,452,539, Cl. 384-94.000.
Davison, Alan: *See*—
Jones, Alun G.; Davison, Alan; and Abrams, Michael J., 4,452,774, Cl. 424-1.100.
Dawdy, Terrance H., to Lord Corporation. Structural adhesive formulations. 4,452,944, Cl. 525-126.000.
Dayco Corporation: *See*—
Mathieu, Julien C., 4,452,148, Cl. 105-199.00C.
Mathieu, Julien C., 4,452,345, Cl. 188-207.000.
Deal, Stephen M., to Caldwell Manufacturing Company. Pivot shoe for sash balance. 4,452,012, Cl. 49-181.000.
DEC International, Inc.: *See*—
Plett, Carl E., 4,452,177, Cl. 119-14.320.
de Cachard, Maurice: *See*—
Berger, Raymond; de Cachard, Maurice; Gouzy, Andre ; and Trombe, Felix, 4,452,051, Cl. 62-467.000.
Deckner, George E.; O'Grady, Hedwig; and Zofchak, Albert, to Charles of the Ritz Group Ltd. Substantive moisturizing derivatives of 2-pyrrolidone-5-carboxylic acid and compositions containing same. 4,452,989, Cl. 548-537.000.
Decor Noel Corporation, The: *See*—
Daniel, James W., Jr., 4,452,836, Cl. 428-11.000.
Deere & Company: *See*—
Orlandea, Nicolae V., 4,452,495, Cl. 305-11.000.
Dejager, William L. Sail-attaching device. 4,452,164, Cl. 114-112.000.
della Valle, Francesco, to Fidia S.p.A. Monohalogenated derivatives of 7-hydroxy-coumarin, pharmaceutical compositions containing the same and methods of using said compositions. 4,452,811, Cl. 424-281.000.
Delpy, David T.: *See*—
Parker, Dawood; and Delpy, David T., 4,452,672, Cl. 204-1.00T.
DeMoully, Thomas R.; Rockey, Robert E.; and Strickland, John J., to General Electric Company. Battery with improved terminal structure. 4,452,869, Cl. 429-94.000.

Denavit, George A.: *See*—
Peterson, Robert B.; Finello, Ralph; and Denavit, George A., 4,452,760, Cl. 422-148.000.
Deneau, Kenneth S., to Midland-Ross Corporation. Rotary hearth pyrolyzer with tapered spreader roll. 4,452,153, Cl. 110-247.000.
Denison, Tom G. Arc welding simulator. 4,452,589, Cl. 434-234.000.
Dennis, Edmund G.; and Brandmaier, C. Edward, to Cashin Systems Corp. Automatic card dispenser and pick-off assembly. 4,452,031, Cl. 53-586.000.
Dennison Manufacturing Company: *See*—
Geurtsen, Friedrich H. H.; Kebbel, Waldemar S.; and Meyer, Manfred, 4,452,659, Cl. 156-361.000.
de Nora, Oronzio; and Bianchi, Giuseppe. Anodic structure for cathodic protection. 4,452,683, Cl. 204-196.000.
Densmore, Richard M.: *See*—
Klieman, Charles H.; and Densmore, Richard M., 4,452,357, Cl. 206-339.000.
Klieman, Charles H.; and Densmore, Richard M., 4,452,376, Cl. 221-198.000.
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Plowman, Richard E., 4,452,487, Cl. 297-411.000.
De Palma, Giovanni; and Motta, Bruno, to Rockwell-Rimoldi S.p.A. Presser foot control for sewing machines. 4,452,158, Cl. 112-235.000.
de Putter, Warner J.: *See*—
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Schade, Gerhard; and Uckert, Peter, 4,452,853, Cl. 528-301.000.
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Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,452,790, Cl. 424-200.000.
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Whitcomb, Paul H.; and Bakowski, Thomas G., 4,452,287, Cl. 144-34.00E.
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Egbers, Gerhard; Schuler, Bernhard; Seidel, Adolf; and Buhler, Gunter, to Sulzer Morat GmbH. Stamped knitting-tool for knitting machines. 4,452,053, Cl. 66-123.000.
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Koch, Kay F.; and Kastner, Ralph E., 4,452,741, Cl. 260-351.000.
Lacefield, William B.; and Simon, Richard L., 4,452,745, Cl. 260-465.00E.
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Sornes, Tor, 4,452,059, Cl. 70-278.000.
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Geary, Carl H., Jr.; and Samurin, Norman A., 4,452,048, Cl. 60-656.000.
Miller, Arthur J.; and Kostors, Charles H., 4,451,959, Cl. 29-156.80R.
Schuster, Carl J., 4,451,979, Cl. 29-824.000.
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Elms, Robert T.; Maynard, Pamela M.; and Mueller, Denis A. Motor control apparatus with short term undervoltage motor mode saver. 4,453,117, Cl. 318-778.000.
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Johnson, Jack E.; Loyd, Ronald C.; and Fodness, William, 4,451,983, Cl. 30-276.000.
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Emrich, Robert R. Self propelled irrigation systems. 4,452,394, Cl. 239-177.00R.
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Schmidt, Donald R., 4,452,695, Cl. 210-168.000.

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Hill, John B.; and Erickson, Robert A., 4,452,994, Cl. 560-121.000.

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Brouwer, Frans, 4,453,084, Cl. 250-202.000.

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Lijewski, Michael E.; and Zeissler, George, 4,452,103, Cl. 74-817.000.

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Omata, Katsumori, 4,452,170, Cl. 118-50.000.

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Farrow, Gerald: *See*—
Conciatori, Anthony B.; Choe, Eui W.; and Farrow, Gerald, 4,452,993, Cl. 560-66.000.

Farrow, Robin F. C.; Jones, Gordon R.; and Sullivan, Philip W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Field effect transistor with gate insulation of cubic fluoride material. 4,453,172, Cl. 357-23.150.

Faulkner, James D.: *See*—
Friedman, Lester A.; Kwong, Cecil D.; and Faulkner, James D., 4,452,709, Cl. 252-8.900.

Faure, Michel: *See*—
Messe, Gerard; Faure, Michel; and Ducombs, Marcel, 4,453,150, Cl. 336-234.000.

FBC Limited: *See*—
Hayes, Edward S. S., 4,452,805, Cl. 424-273.00R.

Fealey, William S., to Textron, Inc. Spring actuated staple driving device. 4,452,388, Cl. 227-132.000.

Fedder, Richard C. Toner concentration sensor assembly for electrophotographic apparatus. 4,452,174, Cl. 118-689.000.

Feder, Alvin: *See*—
Rapps, Gary M.; and Feder, Alvin, 4,453,104, Cl. 310-348.000.

Federal-Mogul Corporation: *See*—
Minter, Marvin J., 4,452,065, Cl. 73-7.000.

Federal Paper Board Company, Inc.: *See*—
Huff, Richard J., 4,452,595, Cl. 493-83.000.

Fedorenko, Galina V.: *See*—
Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., 4,452,946, Cl. 524-541.000.

Fedosov, Alexei Z.: *See*—
Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.

Felbermayer, Erich: *See*—
Muhlbauer, Gerhard; Kagerhuber, Franz; Glatz, Werner; Felbermayer, Erich; and Kim, Leo, 4,452,433, Cl. 266-142.000.

Fellows, Mark W.: *See*—
Stupp, Edward H.; Fellows, Mark W.; Steneck, Walter G.; and Spataro, Vincent J., 4,453,109, Cl. 315-219.000.

Ferrieu, Gilbert M. M., to Telecommunications Radioelectriques et Telephoniques. Arrangement for avoiding annoying sustained oscillations in a closed-loop system and loud-speaking telephone set employing this arrangement. 4,453,039, Cl. 179-81.00B.

Fetterolf Corporation: *See*—
Quinn, Joseph, 4,452,278, Cl. 138-94.300.

Feuerstein, Diane: *See*—
Snyder, William R.; and Feuerstein, Diane, 4,452,704, Cl. 210-701.000.

Fickes, Michael G.; and Warfield, Peter F., to Du Pont de Nemours, E. I., and Company. Preparation of ozone resistant printing plates. 4,452,879, Cl. 430-306.000.

Fidi, Werner; and Wolf, Konrad, to AKG Akustische u.Kino-gerate gesellschaft m.b.H. Elastic support for electroacoustic transducers. 4,453,046, Cl. 179-146.00R.

Fidia S.p.A.: *See*—
della Valle, Francesco, 4,452,811, Cl. 424-281.000.

Fiedler, Volker: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,452,797, Cl. 424-250.000.

Fiedziuszko, Slawomir J., to Ford Aerospace & Communications Corporation. Dual-mode dielectric loaded cavity filter with nonsdjacent mode couplings. 4,453,146, Cl. 333-212.000.

Figdore, Phillip E.: *See*—
Haskin, Helen K.; and Figdore, Phillip E., 4,452,308, Cl. 166-274.000.

Files, William C., to Pellerin Milnor Corporation. Liquid extracting apparatus. 4,452,056, Cl. 68-242.000.

Finch, Harvey E.; and Trapanese, Salvatore P., to FPS Development Partnership. Olive oil recovery. 4,452,744, Cl. 260-412.200.

Finello, Ralph: *See*—
Peterson, Robert B.; Finello, Ralph; and Denavit, George A., 4,452,760, Cl. 422-148.000.

Firestone Tire & Rubber Company, The: *See*—
Pollard, Reginald B., 4,452,655, Cl. 156-126.000.

Firmagroup Australia Pty. Ltd.: *See*—
Leivenzon, Simon; and Leivenzon, Zvi, 4,452,292, Cl. 160-133.000.

Firmenich SA: *See*—
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,453,011, Cl. 568-322.000.

Firmenich, S.A.: *See*—
Fankhauser, Peter, 4,453,013, Cl. 568-361.000.
Schulte-Elte, Karl-Heinrich; and Pamingle, Herve, 4,453,000, Cl. 560-256.000.

Fishbaugh, Byron L.; Keller, Harold E.; and Van Der Aue, John P., to Goodyear Tire & Rubber Company, The. Resilient rotary coupling. 4,452,591, Cl. 464-89.000.

Fisher, Marvin J.: *See*—
Phillips, Graham R.; and Fisher, Marvin J., 4,453,118, Cl. 318-779.000.

Fiskars Manufacturing Corporation: *See*—
Smith, Lloyd T., 4,452,289, Cl. 145-62.000.

Flannagan, Stephen T.: *See*—
Reese, Edmund A.; Spaderna, Dieter W.; and Flannagan, Stephen T., 4,453,237, Cl. 365-222.000.

Flat, Bill D., to Hughes Tool Company. Submersible motor bearing with extended sleeve. 4,453,099, Cl. 310-87.000.

Flax, Stephen W.: *See*—
Pelc, Norbert J.; and Flax, Stephen W., 4,452,085, Cl. 73-631.000.

Flegal, Philip B.; Lancaster, Michael V.; and Hanney, William W., III. Apparatus and methods for recording antimicrobic susceptibility data and biotype data. 4,453,220, Cl. 364-413.000.

Fletcher, Bruce G.: *See*—
Shields, Steven E.; and Fletcher, Bruce G., 4,452,826, Cl. 427-38.000.

Florida Data Corporation: *See*—
Adkinson, James W.; Davis, David W.; and Ishman, Paul A., 4,452,543, Cl. 400-605.000.

FMC Corporation: *See*—
Cummins, Richard W.; and Baum, Burton M., 4,452,716, Cl. 252-78.500.

Fodness, William: *See*—
Johnson, Jack E.; Loyd, Ronald C.; and Fodness, William, 4,451,983, Cl. 30-276.000.

Fogarty, Thomas J.: *See*—
Chin, Albert K., 4,452,244, Cl. 128-321.000.

Foit, Nicholas W., Jr.: *See*—
Kolvek, Robert E.; Bronke, Henry R.; Foit, Nicholas W., Jr.; and Kish, Robert J., 4,452,749, Cl. 264-30.000.

Fonov, Sergei D.: *See*—
Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.

Forberg, Horst; and Muller, Manfred, to Krone GmbH. Wire connector for telecommunications cables. 4,452,502, Cl. 339-99.00R.

Ford Aerospace & Communications Corporation: *See*—
Fiedziuszko, Slawomir J., 4,453,146, Cl. 333-212.000.
Labaar, Frederik, 4,453,139, Cl. 331-47.000.
Morenus, Richard C.; and Moore, John T., 4,452,124, Cl. 89-1.816.

Ford, Michael A., to Perkin-Elmer Limited. Counteracting the effect of phase shift changes between two quantities in extracting their ratio. 4,453,225, Cl. 364-525.000.

Ford Motor Company: *See*—
Croswhite, Howard L., 4,452,099, Cl. 74-695.000.

Formanek, Jiri; and Nilsson, Rune, to Eurotrade Machine Pool Aktiebolag. Device for checking the depth reached by a digging operation. 4,452,078, Cl. 73-432.0HA.

Formation, Inc.: *See*—
Askinazi, Martin; McManus, Liam; Malnati, Paul R.; and Kapeghian, Charles L., 4,453,211, Cl. 364-200.000.

Forney, Edgar W., Jr., to AMP Incorporated. Connector for semirigid coaxial cable. 4,452,503, Cl. 339-177.00R.

Forte, Henry R., to AMSTED Industries Incorporated. Railway wheel lifter and inverter. 4,452,561, Cl. 414-767.000.

Foster Wheeler Energy Corporation: *See*—
Knoblauch, Karl; Richter, Ekkehard; Grochowski, Horst; and Schwarte, Jurgen, 4,452,772, Cl. 423-569.000.

Fowler, Donald M. Resilient midsole component for footwear. 4,451,994, Cl. 36-28.000.

Fowler, Ronald R.: *See*—
Eads, Harold O.; Fowler, Ronald R.; and Adams, Danny C., 4,452,468, Cl. 280-641.000.

Fowles, Patrick E.; and Yan, Tsoung Y., to Mobil Oil Corporation. Direct cooling crystallization. 4,452,621, Cl. 62-534.000.

FPS Development Partnership: *See*—
Finch, Harvey E.; and Trapanese, Salvatore P., 4,452,744, Cl. 260-412.200.

Framatome & CIE.: *See*—
Yazidjian, Jean-Claude, 4,452,183, Cl. 122-392.000.

Francis, John H.; Vernon, John P.; and Moore, John H., to Lucas Industries plc. Linear inductive transducers. 4,453,124, Cl. 323-347.000.

Frank, Wolfram: *See*—
Horacek, Heinrich; Gehm, Robert; Frank, Wolfram; and Marx, Matthias, 4,452,921, Cl. 521-118.000.

Frankeny, Richard F.; and Linton, Charles R., to International Business Machines Corporation. Integrated power circuit with current sensing means. 4,453,194, Cl. 361-154.000.

Frasch, Peter: *See*—
Augstein, Wolfgang; Frasch, Peter; Ivancic, Blanka; and Zuegel, Markus A., 4,452,881, Cl. 430-323.000.

Fraser, Richard J.; Pesce, Robert S.; and Pizzuti, Donato F., to Polaroid Corporation. Folding camera having erectable light source. 4,452,519, Cl. 354-126.000.

Freeman, Bruce A., to Continental Plastics Company. Beverage dispensing system. 4,452,381, Cl. 222-465.00R.

Freeman, John W., Jr., to William Marsh Rice University. Device for generating RF energy from electromagnetic radiation of another form such as light. 4,453,108, Cl. 315-5.180.

Frenchik, Robert A.; and Hoff, Kristen A., to Minnesota Mining and Manufacturing Company. Barrier resin for photothermographic color separation. 4,452,883, Cl. 430-502.000.

Frieber, George, to A T & T Bell Telephone Laboratories. Electrical wire handling tool. 4,451,947, Cl. 7-107.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Ehle, Joachim; and Wagner, Alfred, 4,453,254, Cl. 373-93.000.

Friedman, Lester A.; Kwong, Cecil D.; and Faulkner, James D., to Lester Laboratories, Inc. Antistatic composition. 4,452,709, Cl. 252-8.900.

Frommer, Jane E.; Elsenbaumer, Ronald L.; and Davidson, Douglass S., to Allied Corporation. Solution of a chalcogen-containing polymer and process of forming conducting polymer articles therefrom. 4,452,727, Cl. 252-518.000.

Froncisz, Wojciech; and Hyde, James S., to Medical College of Wisconsin, Inc. Modular lumped circuit resonator. 4,453,147, Cl. 333-219.000.

Fronczkowski, Paul R.: *See*—
Klacik, Kenneth J.; Vink, Walter V.; and Fronczkowski, Paul R., 4,452,825, Cl. 426-658.000.

Fuel Efficiency Co.: *See*—
Dahl, Byron M., 4,452,214, Cl. 123-523.000.

Fugleberg, Sigmund P.; Nyman, Bror G.; Hultholm, Stig-Erik; Parviainen, Asko; and Rastas, Jussi. Hydrometallurgical process for the recovery of valuable metals from metallic alloys. 4,452,762, Cl. 423-54.000.

Fuji Electric Company, Ltd.: *See*—
Namba, Masaharu; Yamauchi, Mitsuru; and Kazama, Toyoki, 4,452,828, Cl. 427-39.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Nagai, Hideo; and Koga, Fumio, 4,452,366, Cl. 220-4.00R.
Ogino, Saburo; Taniguchi, Yoshitomo; and Kiyoshima, Satoshi, 4,452,266, Cl. 137-15.100.
Ohara, Yoshiaki; and Yabuhara, Hideo, 4,452,209, Cl. 123-489.000.

Fuji Photo Film Co., Ltd.: *See*—
Akao, Mutsuo, 4,452,846, Cl. 428-220.000.
Akimura, Yoshitaka; Okutsu, Eiichi; Moriuchi, Shigenori; Saeki, Naomi; Hashimura, Taiji; and Mifune, Hiroyuki, 4,452,882, Cl. 430-441.000.
Hamakawa, Yoshihiro; and Nakajima, Yosuke, 4,453,184, Cl. 358-213.000.
Kitajima, Masao; Arai, Fuminori; and Katsuyama, Harumi, 4,452,887, Cl. 435-14.000.
Nozawa, Yasushi; Kokubo, Tadayoshi; Itoh, Isamu; and Kitaguchi, Hiroshi, 4,452,885, Cl. 430-614.000.

Fujii, Hiroyuki: *See*—
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

Fujii, Kozo: *See*—
Tahara, Susumu; Fujii, Kozo; Nishihira, Keig; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,453,026, Cl. 568-864.000.

Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, to Taiho Pharmaceutical Company Limited. Sulfonate derivatives, process for preparing same and antilipemic compositions containing the derivative. 4,452,813, Cl. 424-303.000.

Fujii, Tetsuya: *See*—
Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, 4,452,634, Cl. 75-93.00R.

Fujimura, Toshio: *See*—
Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, 4,452,634, Cl. 75-93.00R.

Fujioka, Kazuyoshi, to Nissan Motor Company, Limited. Transmission for a working vehicle. 4,452,101, Cl. 74-733.000.

Fujisaki, Shuji; and Chu, Itsuo, to Mitsubishi Denki Kabushiki Kaisha. Multiple cylinder rotary compressor. 4,452,570, Cl. 417-286.000.

Fujisaki, Shuji: *See*—
Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, 4,452,571, Cl. 417-286.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,452,851, Cl. 424-246.000.

Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, to Matsushita Electric Industrial Co., Ltd. Mounting apparatus for leadless electronic parts. 4,451,976, Cl. 29-740.000.

Fujitsu Limited: *See*—
Chiba, Takashi; and Koga, Satoru, 4,453,216, Cl. 364-200.000.
Miwa, Hirohide, 4,452,082, Cl. 73-599.000.

Fukuchi, Shigeki, to Metako Kigyo Co., Ltd. Coupling structure for a screen with a fixing rod. 4,452,294, Cl. 160-395.000.

Fukuda, Kazumasa: *See*—
Kitahra, Yoshimi; Fukuda, Kazumasa; and Maruta, Fumio, 4,452,864, Cl. 428-611.000.

Fukuda, Masao; and Nakada, Etsuo, to Rhythm Watch Co., Ltd. Alarm setting apparatus for timepieces. 4,452,537, Cl. 368-74.000.

Fukunaga, Takayuki: *See*—
Amano, Tomiaki; Eda, Tetsuya; Nishi, Sunao; Shichiri, Shigeyoshi; and Fukunaga, Takayuki, 4,452,296, Cl. 164-363.000.

Fukushima, Toshitsugu, to Sun Dengyosha Company, Limited. Mounting device for switches or the like. 4,453,059, Cl. 200-296.000.

Funke, Dieter: *See*—
Amann, Hugo; and Funke, Dieter, 4,453,227, Cl. 364-900.000.

Furuhama, Shoichi. Oil ring. 4,452,464, Cl. 277-216.000.

Furukatsu, Tadanobu: *See*—
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Furutani, Toshinobu: *See*—
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; and Okazaki, Mari, 4,452,687, Cl. 204-428.000.

G. D. Searle & Co.: *See*—
Hill, John B.; and Erickson, Robert A., 4,452,994, Cl. 560-121.000.

Gaenzler, Wolfgang: *See*—
Besecke, Siegmund; Schroeder, Guenter; Siegert, Hermann-Josef; and Gaenzler, Wolfgang, 4,452,999, Cl. 560-233.000.
Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., to Burroughs Corporation. Extended address generating apparatus and method. 4,453,212, Cl. 364-200.000.
Galasso, Francis S.: *See*—
Birbara, Philip J.; Galasso, Francis S.; and Veltri, Richard D., 4,452,676, Cl. 204-129.000.
Gallagher, Gregory, Jr., to Smithkline Beckman Corporation. 4-Aminoalkyl-2(3H)-indolones. 4,452,808, Cl. 424-274.000.
Gallus, Julius P., to Union Oil Company of California. Marker fluid composition for spotting cement in offshore wells. 4,452,638, Cl. 106-97.000.
Gandy, James, to Signtech Inc. Illuminatable sign. 4,452,000, Cl. 40-574.000.
GAO Gesellschaft fur Automation und Organisation mbH.: *See*—
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,452,843, Cl. 428-199.000.
Gardner Bender, Inc.: *See*—
Custin, James R., 4,452,064, Cl. 72-459.000.
Gardner, John: *See*—
Huff, Greg; and Gardner, John, 4,453,159, Cl. 340-590.000.
Garms, Albert M.: *See*—
Roy, Donald A.; and Garms, Albert M., 4,452,095, Cl. 74-412.0TA.
Garner, H. Douglas; and Howell, William E., to United States of America, National Aeronautics and Space Administration. Heads up display. 4,453,163, Cl. 340-980.000.
Garrett, Arthur E. Portable apportioning apparatus. 4,452,380, Cl. 222-335.000.
Garrett Corporation, The: *See*—
Conant, Ronald G.; and Veasey, Larry T., 4,452,564, Cl. 415-9.000.
Garrett, Elgie: *See*—
Capek, Raymond G.; and Garrett, Elgie, 4,453,153, Cl. 338-309.000.
Garrett, Michael E.; and Kite, Oliver A. Biological treatment of sewage. 4,452,701, Cl. 210-627.000.
Garrigus, Mark W.: *See*—
Goodman, Maurice, Jr.; and Garrigus, Mark W., 4,452,233, Cl. 126-443.000.
Gary, Richard A.: *See*—
Klinedinst, Keith A.; and Gary, Richard A., 4,452,872, Cl. 429-105.000.
Gaskins, Thomas. Universal clip and grill assembly. 4,452,131, Cl. 99-402.000.
Gasparian, George A., to International Telephone and Telegraph Corporation. Bidirectional coupler for communication over a single fiber. 4,452,505, Cl. 350-96.150.
Gatch, Harry, to Handley Industries, Inc. Plastic pipe squeezing device and valve box for use therewith. 4,452,271, Cl. 137-369.000.
Gates Rubber Company, The: *See*—
Patterson, Philip M., 4,452,594, Cl. 474-153.000.
Gateway Industries, Inc.: *See*—
Doty, Gerald A., 4,452,470, Cl. 280-802.000.
Gause, William C., to AT&T Technologies, Inc. Apparatus for detecting breaks in strand material. 4,452,168, Cl. 116-200.000.
Gavignet, Alain H.; and Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Well logging tool. 4,452,076, Cl. 73-155.000.
Gavin, Thomas D.: *See*—
Heinemann, Frederick E.; and Gavin, Thomas D., 4,452,143, Cl. 101-426.000.
Gay Freres, S.A.: *See*—
Gay, Jean-Pierre, 4,452,036, Cl. 59-80.000.
Gay, Jean-Pierre, to Gay Freres, S.A. Metal bracelet in the form of a band comprised of members linked one with respect to the other. 4,452,036, Cl. 59-80.000.
Gaynor, John C.: *See*—
Palmer, Jay W.; and Gaynor, John C., 4,452,770, Cl. 423-167.000.
Geary, Carl H., Jr.; and Samurin, Norman A., to Elliott Turbomachinery Company, Inc. Method and apparatus for starting an FCC power recovery string. 4,452,048, Cl. 60-656.000.
Gehm, Robert: *See*—
Horacek, Heinrich; Gehm, Robert; Frank, Wolfram; and Marx, Matthias, 4,452,921, Cl. 521-118.000.
Geiger, David H. Composite roof membrane. 4,452,848, Cl. 428-247.000.
Gelardi, Anthony L.; Nuppula, Gerald W.; and Phillippe, James, to Shape Inc. Tape reel hub assembly. 4,452,404, Cl. 242-71.800.
Gellert, Jobst U. Pressure casting process. 4,451,974, Cl. 29-611.000.
General Dynamics Electronics Division: *See*—
Crooks, James W., Jr., 4,453,224, Cl. 364-525.000.
General Dynamics, Pomona Division: *See*—
KaDell, Charles W., Jr., 4,452,654, Cl. 156-91.000.
General Electric Company: *See*—
Bolon, Donald A.; and Hallgren, John E., 4,452,968, Cl. 528-271.000.
Bose, Bimal K., 4,453,116, Cl. 318-727.000.
Brunelle, Daniel J., 4,452,932, Cl. 524-110.000.
Brunelle, Daniel J., 4,452,970, Cl. 528-279.000.
Dabrowski, John E., 4,452,915, Cl. 502-328.000.
DeMoully, Thomas R.; Rockey, Robert E.; and Strickland, John J., 4,452,869, Cl. 429-94.000.
Grey, Delton A., Jr.; and Green, Robert W., 4,452,664, Cl. 156-631.000.
Huang, Rex H.; Hale, John R.; and Brackman, William D., Jr., 4,453,193, Cl. 361-98.000.
McCready, Russell J., 4,452,933, Cl. 524-217.000.
McCready, Russell J., 4,452,969, Cl. 528-279.000.
Nelson, Donald A., 4,453,101, Cl. 310-211.000.
Peil, William; Brown, Thomas A.; and Dissosway, Marc A., 4,453,094, Cl. 307-451.000.
Pelc, Norbert J.; and Flax, Stephen W., 4,452,085, Cl. 73-631.000.
Rios, Pedro A., 4,453,149, Cl. 335-216.000.
Taylor, Benson T., Jr.; and Hawkins, Ralph G., 4,453,065, Cl. 219-10.55D.
Wilkinson, Stanley B., 4,453,191, Cl. 361-84.000.
General Engineering & Manufacturing Corp.: *See*—
Wallace, John B.; and Pearson, Charles G., 4,452,098, Cl. 74-531.000.
General Instrument Corporation: *See*—
Bush, Robert D.; and Cowles, Dean S., 4,453,198, Cl. 361-288.000.
General Motors Corporation: *See*—
Berland, Craig A., 4,452,198, Cl. 123-310.000.
Carpenter, Keith H., 4,452,541, Cl. 384-223.000.
Cataldo, Roy S., 4,452,396, Cl. 239-223.000.
Colautti, Albert J., 4,452,545, Cl. 403-61.000.
Eesley, Gary L.; Buchholz, Jeffrey C.; and Sell, Jeffery A., 4,452,071, Cl. 73-52.000.
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,452,501, Cl. 339-91.00R.
Gute, Loren R., 4,452,436, Cl. 267-64.150.
Keating, Edward J., 4,452,221, Cl. 123-661.000.
Last, Daniel F.; and Roth, Robert H., 4,452,301, Cl. 165-42.000.
Moore, George R., 4,453,088, Cl. 307-10.00R.
Palanisamy, Ponnusamy; and Ewing, Keith E., 4,452,726, Cl. 252-518.000.
Rogers, Lloyd W., Jr., 4,452,469, Cl. 280-801.000.
Rugienius, Algis J., 4,452,488, Cl. 297-452.000.
Steele, Robert E., 4,452,191, Cl. 123-179.00H.
Stukenborg, James L., 4,452,346, Cl. 188-250.00G.
Tsai, Lung-Wen, 4,452,592, Cl. 464-102.000.
Workman, Michael J., 4,452,096, Cl. 74-492.000.
General Research of Electronics, Inc.: *See*—
Nakano, Masao, 4,453,265, Cl. 381-120.000.
Geo. A. Hormel & Company: *See*—
Leining, Lyndon R., 4,451,953, Cl. 17-21.000.
Georgia-Pacific Corporation: *See*—
Swafford, John H., 4,452,934, Cl. 524-243.000.
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Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.
Gerber Garment Technology, Inc.: *See*—
Pearl, David R., 4,452,113, Cl. 83-56.000.
Gergely, Gerhard. Confectionery product, particularly chewing gum, and process for its manufacture. 4,452,821, Cl. 426-5.000.
Gersonde, Klaus; and Schal, Wilfried. Method of and arrangement for producing lipid vesicles. 4,452,747, Cl. 264-4.100.
Geschwindner, Herbert; and Abendroth, Paul, to M.A.N.-Roland. Device for registering the rear edges of the sheets in sheet delivery mechanisms for printing machines. 4,452,442, Cl. 271-204.000.
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Grobman, Warren D., to International Business Machines Corporation. Electron beam system with reduced charge buildup. 4,453,086, Cl. 250-307.000.
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Grunz, James H. Toilet seat and cover assembly. 4,451,940, Cl. 4-234.000.
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Daniels, William R.; and Young, John S., 4,453,048, Cl. 179-175.20R.
Daniels, William R.; and Young, John S., 4,453,049, Cl. 179-175.20R.
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Wolf, Ann L.; and Wagoner, John G., 4,453,042, Cl. 179-84.0VF.
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Klinedinst, Keith A.; and Gary, Richard A., 4,452,872, Cl. 429-105.000.
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Haga, Kyosuke; and Tanaka, Tsuneo, to Toyoda Koki Kabushiki Kaisha. Rotary valve for power steering system. 4,452,274, Cl. 137-625.220.

Hagner, Robert C. High pressure flow line connection. 4,452,474, Cl. 285-334.100.

Hahn, Ron T.: *See*—
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Haidt, Sterling J. Extraocular method of treating the eye with liquid perfluorocarbons. 4,452,818, Cl. 424-352.000.

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Hamanishi, Yoshinari, to Nippon Kogaku K.K. Zoom lens capable of close range photography and method of focusing the same to a short distance. 4,452,513, Cl. 350-428.000.

Hamm, Robert A., to Boeing Company, The. Composite integral web stiffening method. 4,452,657, Cl. 156-198.000.

Hammel, Greg J.: *See*—
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Hancock, William L.; and Bewley, Wilbur C., Jr., to Hoover Universal, Inc. Box spring assembly with improved corner springs. 4,452,438, Cl. 267-103.000.

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Hara, Hiroshi: *See*—
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Harada, Toshiaki; Hiramatsu, Toshiyuki; and Yamaji, Teizo, to Teijin Limited. Fluorescent composition having the ability to change wavelengths of light, shaped article of said composition as a light wavelength converting element and device for converting optical energy to electrical energy using said element. 4,452,720, Cl. 252-301.160.

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Harbaugh, Donal E., to McDonnell Douglas Corporation. Corner structure for cryogenic insulation system. 4,452,162, Cl. 114-74.00A.

Harder, Joseph R.; and Keesling, James E., to Phillips Petroleum Company. Method and apparatus for extruding thermoplastic shape. 4,452,752, Cl. 264-555.000.

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Hardy, Duane S. Manipulatable implement. 4,452,477, Cl. 294-16.000.

Harootion, Aramais, to Whittaker Corporation. Self-feeding cable stripper. 4,452,105, Cl. 81-9.50R.

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Pate, James R., 4,453,203, Cl. 362-345.000.

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Haskin, Helen K.; and Figdore, Phillip E., to Texaco Inc. Method of using low molecular weight polyalkylene glycols as sacrificial agents for surfactant flooding. 4,452,308, Cl. 166-274.000.

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Hauni-Werke Korber & Co. KG.: *See*—
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Hawkins, Ralph G.: *See*—
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Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Cylinder block of engine. 4,452,192, Cl. 123-195.00R.
Hayes, Edward S. S., to FBC Limited. Fungicidal mixtures comprising an imidazole and an amine. 4,452,805, Cl. 424-273.00R.
Hayes, Robert H. Fire hose retracting and flattening apparatus. 4,452,135, Cl. 100-153.000.
Haytayan, Harry M., to Pneutek, Inc. Self-centering fastening tool. 4,452,387, Cl. 227-8.000.
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Heath, Allan B.: *See*—
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Heilman, Martin S., to Medrad, Inc. Syringe content indicating device. 4,452,251, Cl. 128-655.000.
Heinemann, Frederick E.; and Gavin, Thomas D., to W. R. Grace & Co. Offset printing blanket. 4,452,143, Cl. 101-426.000.
Heinrich, William P.: *See*—
Leopoldi, Norbert; and Heinrich, William P., 4,452,243, Cl. 128-314.000.
Heinz, Lothar; Menor, George; and Jahsman, Hendrick, to Siemens Medical Laboratories, Inc. Medical couch. 4,451,945, Cl. 5-63.000.
Hemex, Inc.: *See*—
Klawitter, Jerome J., 4,451,937, Cl. 3-1.500.
Henry, Robert P. Novel photon absorbing or emitting polymers and their use as reagents in immunoassay systems. 4,452,886, Cl. 435-7.000.
Henschel, Edward W. Head covering equipped with double pocket. 4,451,935, Cl. 2-185.00R.
Hepp, Vincent R.: *See*—
Clavier, Christian M.; Hepp, Vincent R.; and Dumestre, Alexis C., 4,453,219, Cl. 364-422.000.
Herb, Armin: *See*—
Leibhard, Erich; Herb, Armin; Bergner, Arndt; and Lang, Gusztav, 4,452,285, Cl. 141-392.000.
Herbert, William B. Trailer control device for tractor-trailer vehicles. 4,452,466, Cl. 280-432.000.
Hercules Incorporated: *See*—
Brodsky, Gregory I.; and Scheve, Bernard J., 4,452,855, Cl. 428-290.000.
Herion-Werke KG: *See*—
Ott, Helmut; and Motzer, Helmut, 4,452,267, Cl. 137-116.500.
Herman Miller, Inc.: *See*—
Propst, Robert L., 4,452,449, Cl. 272-134.000.
Hermann Wangner GmbH & Co. KG: *See*—
Eckstein, Konrad; and Wandel, Hermann, 4,452,284, Cl. 139-383.00A.
Hermecz, Istvan; Breining, Tibor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Kokosi, Jozsef, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Process for the preparation of nitrogen-bridgehead condensed pyrimidine compounds, and pharmaceutical compositions containing them. 4,452,982, Cl. 544-282.000.
Hernandez, Thomas J.: *See*—
Middleton, Michael C.; and Hernandez, Thomas J., 4,453,208, Cl. 364-140.000.
Hernick, Jack F.; and Lamont, Vincent G. Multi-stage vehicle hoist. 4,452,340, Cl. 187-8.430.
Herr, Jan E. Apparatus for transmitting electric current by concentric channels of ionized gas. 4,453,196, Cl. 361-232.000.
Herrmann, Willy. Filter device for the softening and/or complete desalination of a liquid, particularly water. 4,452,705, Cl. 210-286.000.
Herubel, Jean-Frederic, to N. Schlumberger & Cie. Suspension device for a power-driven handtool. 4,451,952, Cl. 17-1.00B.
Hetzelt, Stephan; and Pichler, Oswald, to TRAK Sportartikel GmbH. Cross country ski. 4,452,467, Cl. 280-615.000.
Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH: *See*—
Ballach, Reinhold; Kroll, Dieter; and Rinn, Jurgen, 4,452,109, Cl. 82-3.000.
Heymer, Gero: *See*—
Gradl, Reinhard; Schimmel, Gunther; Krause, Werner; and Heymer, Gero, 4,452,768, Cl. 423-321.00R.
Higashiura, Toshiyuki: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,451,976, Cl. 29-740.000.
Higgins, Ronald W.: *See*—
Johnson, Richard E.; Williams, Roger O.; Higgins, Ronald W.; and Lewis, David M., 4,453,188, Cl. 360-78.000.
Higuchi, Chojiro: *See*—
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.
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Hill, John B.; and Erickson, Robert A., to G. D. Searle & Co. Process for isolating organic compounds and lithium salt complexes useful in said process. 4,452,994, Cl. 560-121.000.
Hiltebrandt, Siegfried; and Bonnet, Ludwig, to Richard Wolf GmbH. Coupling member for coupling an optical system to an endoscope shaft. 4,452,546, Cl. 403-349.000.
Hilti Aktiengesellschaft: *See*—
Leibhard, Erich; Herb, Armin; Bergner, Arndt; and Lang, Gusztav, 4,452,285, Cl. 141-392.000.
Rumpp, Gerhard; and Theissig, Werner, 4,453,032, Cl. 174-46.000.
Hinkle, Edward G. Cart for relatively small concrete batches and the like. 4,452,536, Cl. 366-47.000.
Hippler, Heinz-Peter: *See*—
Bohlander, Peter; and Hippler, Heinz-Peter, 4,453,083, Cl. 250-561.000.
Hiramatsu, Toshiyuki: *See*—
Harada, Toshiaki; Hiramatsu, Toshiyuki; and Yamaji, Teizo, 4,452,720, Cl. 252-301.160.
Hirano, Mikio: *See*—
Horiuchi, Susumu; Hirano, Mikio; Hirayama, Satoshi; Ishikawa, Ryoichi; and Iinuma, Hajime, 4,452,733, Cl. 252-632.000.
Hirano, Yoshio; Tokunaga, Noriyuki; Murabayashi, Hidekazu; and Urayama, Takumi, to Matsushita Electric Works, Ltd. Local washing device of flush toilet. 4,451,942, Cl. 4-420.200.
Hiraoka, Hiroyuki, to International Business Machines Corporation. Polymeric halocarbons as plasma etch barriers. 4,452,665, Cl. 156-643.000.
Hirata, Reiji: *See*—
Iwamoto, Akira; Hirata, Reiji; and Yako, Hikoya, 4,453,110, Cl. 315-241.00P.
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Horiuchi, Susumu; Hirano, Mikio; Hirayama, Satoshi; Ishikawa, Ryoichi; and Iinuma, Hajime, 4,452,733, Cl. 252-632.000.
Hirohata, Michio; and Ikari, Hideo, to Canon Kabushiki Kaisha. Camera having an electromagnetically driven shutter. 4,452,521, Cl. 354-195.100.
Hironaka, Tetsuo: *See*—
Yokoshima, Minoru; Nawata, Kazuyoshi; Hironaka, Tetsuo; and Takahashi, Hideaki, 4,452,996, Cl. 560-185.000.
Hirota, Kunio: *See*—
Takata, Yoshinori; Miyagi, Hiroyuki; Hirota, Kunio; Shibata, Yasuhisa; Nidaira, Kazuo; and Shirato, Fusao, 4,452,682, Cl. 204-403.000.
Hirozawa, Stanley T., to BASF Wyandotte Corporation. High pH coolant containing carbonate ion. 4,452,715, Cl. 252-75.000.
Hirozawa, Stanley T.: *See*—
Wilson, Joe C.; Hirozawa, Stanley T.; Eisenstein, Stephen E.; and Maxwell, Jerrold F., 4,452,758, Cl. 422-15.000.
Hisatsune, Fumiyuki: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; and Yoshiyasu, Hajimu, 4,453,053, Cl. 200-144.00R.
Hitachi Kinzoku Kabushiki Kaisha: *See*—
Amano, Tomiaki; Eda, Tetsuya; Nishi, Sunao; Shichiri, Shigeyoshi; and Fukunaga, Takayuki, 4,452,296, Cl. 164-363.000.
Hitachi, Ltd.: *See*—
Horiuchi, Susumu; Hirano, Mikio; Hirayama, Satoshi; Ishikawa, Ryoichi; and Iinuma, Hajime, 4,452,733, Cl. 252-632.000.
Kanamaru, Hisanobu; and Oku, Masaharu, 4,452,060, Cl. 72-117.000.
Kimura, Katsuhiro; Endo, Akira; Shibata, Takanori; and Morozumi, Hiroshi, 4,453,125, Cl. 324-58.50A.
Kodama, Naoki; Suzuki, Ryo; Takeshita, Masatoshi; and Sugita, Yutaka, 4,453,231, Cl. 365-36.000.
Munakata, Chusuke; and Kohno, Hideki, 4,453,181, Cl. 358-101.000.
Sasayama, Takao; and Kato, Kazuo, 4,452,210, Cl. 123-490.000.
Suzuki, Michio; Terada, Matsuaki; Kato, Takao; and Toki, Ryuichi, 4,453,247, Cl. 370-94.000.
Suzuki, Taihei; and Inoue, Kensuke, 4,453,210, Cl. 364-200.000.
Takata, Yoshinori; Miyagi, Hiroyuki; Hirota, Kunio; Shibata, Yasuhisa; Nidaira, Kazuo; and Shirato, Fusao, 4,452,682, Cl. 204-403.000.
Watatani, Yoshizumi; Ito, Shigeyuki; and Mohri, Katsuo, 4,453,186, Cl. 358-330.000.
Hitchcock, Martin K.; Potter, Craig W.; and Romesberg, Floyd E., to Dow Chemical Company, The. Manufacture of draw-redraw cans using an irradiated film laminated or extrusion coated steel sheet material. 4,452,374, Cl. 220-458.000.
Hitchcock, N. S.: *See*—
Lo, Gerald J. P.; Cuhaci, Misel; and Hitchcock, N. S., 4,453,257, Cl. 375-60.000.
Hiyoshi, Tsutomu: *See*—
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.
Hobbs, Robert H.; and Solomon, Peter R., to United Technologies Corporation. Method and apparatus for particle size determination in a host material. 4,453,226, Cl. 364-555.000.
Hobein, Dietmar: *See*—
Arndt, Diether; and Hobein, Dietmar, 4,452,551, Cl. 405-264.000.
Hochstein, Peter A. Amplifier power supply controlled by audio signal. 4,453,264, Cl. 381-110.000.

Hodge, Margaret. Perfuming means for jewelry. 4,452,052, Cl. 63-1.00R.
Hodgkins, Harry L.; and Reingruber, John K., to United States of America, Navy. Expendable infrared source and method therefor. 4,452,039, Cl. 60-207.000.
Hodson, Harold F.: *See*—
Batchelor, John F.; Vinter, Jeremy G.; and Hodson, Harold F., 4,452,991, Cl. 549-383.000.
Hoechst Aktiengesellschaft: *See*—
Gradl, Reinhard; Schimmel, Gunther; Krause, Werner; and Heymer, Gero, 4,452,768, Cl. 423-321.00R.
Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Effland, Richard C.; and Klein, Joseph T., 4,452,803, Cl. 424-267.000.
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,452,802, Cl. 424-267.000.
Shutske, Gregory M., 4,452,804, Cl. 424-272.000.
Hoefelmayr, Tilman; and Maier, Jakob, to Bio-Melktechnik Hoefelmayr & Co. Milk flow meter. 4,452,176, Cl. 119-14.170.
Hoehne, Klaus: *See*—
Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, 4,452,834, Cl. 427-379.000.
Hoff, Kristen A.: *See*—
Frenchik, Robert A.; and Hoff, Kristen A., 4,452,883, Cl. 430-502.000.
Hoffmann-La Roche Inc.: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,452,807, Cl. 424-274.000.
Schadt, Martin; Schleich, Kuno; and Trickes, Georg, 4,452,718, Cl. 252-299.610.
Takemoto, Kenji; Miyasaka, Yumiko; Ishitsuka, Hideo; Suhara, Yasuji; and Maruyama, Hiromi, 4,452,782, Cl. 424-177.000.
Hofmeester, Paul M., to Koninklijke Bos Kalis Westminster Group N.V. Method and apparatus for laying pipelines on land. 4,452,550, Cl. 405-154.000.
Hogan, William F., to Spectrum X-Ray Corporation. Safety latches for tiltable emergency X-ray examination table. 4,452,439, Cl. 269-323.000.
Hogg, Cecil B.: *See*—
Merriam, Jay S.; and Hogg, Cecil B., 4,452,854, Cl. 423-437.000.
Hohm, Reinhard: *See*—
Wochnowski, Waldemar; and Hohm, Reinhard, 4,452,256, Cl. 131-303.000.
Hojo, Takeshi, to Kabushiki Kaisha Tokyo Keiki. Gyrocompass. 4,451,990, Cl. 33-327.000.
Hoko Sangyo Co., Ltd.: *See*—
Muraguchi, Yutaka, 4,452,558, Cl. 414-433.000.
Holmer, Nils-Gunnar: *See*—
Mattsson, Soren; Holmer, Nils-Gunnar; Bernstein, Kurt; Ulmsten, Ulf; Astedt, Birger; and Jacobsson, Lars, 4,453,075, Cl. 250-363.00S.
Holmwood, Graham: *See*—
Lurssen, Klaus; Holmwood, Graham; Kramer, Wolfgang; Regel, Erik; Reiser, Wolf; and Schroder, Rolf, 4,452,625, Cl. 71-76.000.
Holt, Richard A.: *See*—
Cheadle, Brian A.; and Holt, Richard A., 4,452,648, Cl. 148-11.50F.
Holt, Sherwood G., to Consolidated Papers, Inc. Paper coating method. 4,452,833, Cl. 427-356.000.
Holtrop, John W.; and Bartels, Bruce C., to United States of America, Navy. Composite round/rapid fire gun. 4,452,123, Cl. 89-1.706.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Matsuyama, Youji, 4,452,330, Cl. 180-219.000.
Honda, Junji: *See*—
Kawauchi, Susumu; Honda, Junji; Nishikawa, Kiyoaki; and Tsuji, Masahiro, 4,452,757, Cl. 420-471.000.
Honeywell-Braukmann GmbH: *See*—
Vollmer, Rudolf, 4,452,184, Cl. 122-504.100.
Honeywell Inc.: *See*—
Kraftheter, Brian C.; and Strand, Rolf L., 4,452,417, Cl. 248-604.000.
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,452,725, Cl. 252-500.000.
Honeywell Information Systems Inc.: *See*—
Boudreau, Daniel A., 4,453,093, Cl. 307-440.000.
Middleton, Michael C.; and Hernandez, Thomas J., 4,453,208, Cl. 364-140.000.
Hoover Company, The: *See*—
Kuplas, Harbey, 4,452,618, Cl. 55-362.000.
Hoover Universal, Inc.: *See*—
Hancock, William L.; and Bewley, Wilbur C., Jr., 4,452,438, Cl. 267-103.000
Hopkins, P. Donald; Meyers, Bernard L.; and Van Duch, Donna M., to Standard Oil Company (Indiana). Chromium expanded smectite clay. 4,452,910, Cl. 502-84.000.
Hoppner, Dietrich: *See*—
Eberhardt, Kurt; Hoppner, Dietrich; and Rall, Bernhard, 4,453,038, Cl. 179-81.00B.
Horacek, Heinrich; Gehm, Robert; Frank, Wolfram; and Marx, Matthias, to BASF Aktiengesellschaft. Process for the preparation of polyurethane-polyisocyanurate foams. 4,452,921, Cl. 521-118.000.
Horiuchi, Susumu; Hirano, Mikio; Hirayama, Satoshi; Ishikawa, Ryoichi; and Iinuma, Hajime, to Hitachi, Ltd. Equipment for volume-reducing treatment of radioactive waste. 4,452,733, Cl. 252-632.000.
Horsley, John K.: *See*—
Dyett, Derek H.; Troll, Dennis G.; and Horsley, John K., 4,452,172, Cl. 118-203.000.
Horton, Gary B. Reamer. 4,452,307, Cl. 166-174.000.
Horvath, Agnes: *See*—
Hermecz, Istvan; Breining, Tibor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Kokosi, Jozsef, 4,452,982, Cl. 544-282.000.
Hoshimi, Susumu; and Kojima, Tadashi, to Sony Corporation; and Tokyo Shibaura Denki Kabushiki Kaisha. PCM Signal processing apparatus. 4,453,250, Cl. 371-40.000.
Hosoe, Katsuharu: *See*—
Takasu, Yasuhito; Hosoe, Katsuharu; and Iwata, Toshiharu, 4,452,205, Cl. 123-419.000.
Hospital for Sick Children, The: *See*—
Albisser, Anthony M.; and Jackman, Warren S., 4,452,599, Cl. 604-49.000.
Volgyesi, George A., 4,453,126, Cl. 324-61.00R.
Hougen, Everett D. Annular hole cutter. 4,452,554, Cl. 408-206.000.
Houlihan, William J.: *See*—
Hardtmann, Goetz E.; and Houlihan, William J., 4,452,787, Cl. 424-251.000.
Howell, William E.: *See*—
Garner, H. Douglas; and Howell, William E., 4,453,163, Cl. 340-980.000.
Hoyt/Easton Archery Co.: *See*—
Quartino, Miguel A.; and Mundt, Thomas R., 4,452,222, Cl. 124-24.00R.
Hozumi, Norimi; and Nakajima, Nobuyuki, to Diesel Kiki Co., Ltd. Accumulator for pneumatic or hydraulic devices. 4,452,276, Cl. 138-30.000.
HRI, Inc.: *See*—
Eccles, Richard M.; Li, Allen S. U.; Lin, Shyy-Jong D.; Malik, Virginia A.; and Chervenak, Michael C., 4,452,911, Cl. 502-100.000.
Hsu, Cheng-Ting, to Iowa State University Research Foundation, Inc. Tornado type wind turbines. 4,452,562, Cl. 415-2.00A.
Huang, Rex H.; Hale, John R.; and Brackman, William D., Jr., to General Electric Company. Overcurrent protection for push-pull circuits. 4,453,193, Cl. 361-98.000.
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, to Hydril Company. Well blowout preventer, and packing element. 4,452,421, Cl. 251-1.00B.
Huff, Greg; and Gardner, John, to Thermon Manufacturing Company. Self-monitoring heat tracing system. 4,453,159, Cl. 340-590.000.
Huff, Richard J., to Federal Paper Board Company, Inc. Stripper apparatus for paperboard blanks. 4,452,595, Cl. 493-83.000.
Huffman, William A., to Minnesota Mining and Manufacturing Company. Substituted anthracene-type isotropic dyes for liquid crystal display devices. 4,452,511, Cl. 350-346.000.
Hughes Aircraft Company: *See*—
Shields, Steven E.; and Fletcher, Bruce G., 4,452,826, Cl. 427-38.000.
Hughes Tool Company: *See*—
Flat, Bill D., 4,453,099, Cl. 310-87.000.
Hull, Patricia G.: *See*—
Hunt, Arlon J.; and Hull, Patricia G., 4,452,047, Cl. 60-641.150.
Hultholm, Stig-Erik: *See*—
Fugleberg, Sigmund P.; Nyman, Bror G.; Hultholm, Stig-Erik; Parviainen, Asko; and Rastas, Jussi, 4,452,762, Cl. 423-54.000.
Hunt, Arlon J.; and Hull, Patricia G. Reciprocating solar engine. 4,452,047, Cl. 60-641.150.
Hunt, Arlon J., to United States of America, Energy. Carbon particles. 4,452,771, Cl. 423-450.000.
Huret et ses Fils: *See*—
Coue, Maurice E. L., 4,452,593, Cl. 474-80.000.
Hurley, Byron H.; and Ricks, Walter G. Container relief device and method. 4,452,377, Cl. 222-1.000.
Hurst, Thomas B.: *See*—
Peterson, Morris W.; and Hurst, Thomas B., 4,452,765, Cl. 423-242.000.
Hurwitz, Frances I.: *See*—
Whittenberger, John D.; and Hurwitz, Frances I., 4,452,088, Cl. 73-856.000.
Huschelrath, Gerhard; and Laudenbach, Karl, to Nukem GmbH. Electrodynamic ultrasonic transformer. 4,452,086, Cl. 73-643.000.
Husemeyer, Hans: *See*—
Konrad, Eugen; Husemeyer, Hans; and Mager, Herbert, 4,452,603, Cl. 8-405.000.
Husted, Eric F.: *See*—
Miller, Michael J.; Scheithauer, Richard A.; Vanderpool, Clarence D.; and Husted, Eric F., 4,452,633, Cl. 75-0.50A.
Hyde, James S.: *See*—
Froncisz, Wojciech; and Hyde, James S., 4,453,147, Cl. 333-219.000.
Hydril Company: *See*—
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,452,421, Cl. 251-1.00B.
Hylton, Charles L., to United States of America, Energy. Fuel rod retention device for a nuclear reactor. 4,452,755, Cl. 376-364.000.
Ichinose, Hidefumi: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; Okabuyashi, Shigeo; and Ichinose, Hidefumi, 4,452,637, Cl. 106-89.000.
Icking, Friedrich; and Bucker, Heinrich, to Westfalia Separator AG. Cleaning apparatus for milk conveying paths in animal milking machines. 4,452,268, Cl. 137-240.000.
Ida, Mitsuru, to Sony Corporation. Tape transport mechanism for cassette tape player. 4,453,189, Cl. 360-96.300.
Idemitsu Kosan Company Limited: *See*—
Matsuo, Shigeru; and Itoi, Masaaki, 4,452,966, Cl. 528-174.000.

Ihrig, Arthur M.: *See*—
Norman, Vello; and Ihrig, Arthur M., 4,452,259, Cl. 131-349.000.
Iinuma, Hajime: *See*—
Horiuchi, Susumu; Hirano, Mikio; Hirayama, Satoshi; Ishikawa, Ryoichi; and Iinuma, Hajime, 4,452,733, Cl. 252-632.000.
Ikari, Hideo: *See*—
Hirohata, Michio; and Ikari, Hideo, 4,452,521, Cl. 354-195.100.
Ikeda, Sakuji: *See*—
Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, 4,452,959, Cl. 526-159.000.
Ikuo, Yamaguchi; Yasuo, Higashibata; Masaru, Fujimura; Toshio, Nagashima; and Shunsuke, Sugano, to Takenaka Komuten Co., Ltd. Antiseismic reinforcement method for an existing building with a concrete block system. 4,452,019, Cl. 52-167.000.
Ikuta, Yasuhiro: *See*—
Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.
Illinois Tool Works Inc.: *See*—
Wanatowicz, Edward W., Jr.; and Boma, Dennis G., 4,453,063, Cl. 200-340.000.
Imagination Properties, Inc.: *See*—
Schulze, Everett E., Jr., 4,452,444, Cl. 272-65.000.
Imahori, Seiichi: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.
Imai, Kouichi: *See*—
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Imperial Chemical Industries Limited: *See*—
Jackson, Kenneth; and Pickett, Nigel P., 4,453,076, Cl. 250-374.000.
Imperial Chemical Industries PLC: *See*—
Bowen, Thomas N. E.; Butler, Peter; and Palluel, Auguste L. L., 4,452,945, Cl. 525-161.000.
Carroll, William G.; and Farley, Peter, 4,452,923, Cl. 521-167.000.
Glen, John B.; and James, Roger, 4,452,817, Cl. 424-346.000.
Staniland, Philip A., 4,453,010, Cl. 568-319.000.
Waite, Frederick A., 4,452,610, Cl. 44-62.000.
Waite, Frederick A.; and Waters, Julian A., 4,453,261, Cl. 524-458.000.
Imperial Clevite Inc.: *See*—
McLeod, Keith C., 4,452,756, Cl. 419-29.000.
Inada, Junji, to Dai Nippon Insatsu Kabushiki Kaisha. Contamination-free method and apparatus for filling spouted bags with a fluid. 4,452,030, Cl. 53-426.000.
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Synchronizing circuit for detecting and interpolating sync signals contained in digital signal. 4,453,260, Cl. 375-116.000.
Indra, Jaromir, to Vysoke uceni technicke v Brne. Device for stopping a fuel injection engine. 4,452,196, Cl. 123-198.0DB.
Industrial Filter & Pump Manufacturing Co.: *See*—
Zievers, James F.; and Eggerstedt, Paul, 4,452,707, Cl. 210-777.000.
Industrial Louvers, Inc.: *See*—
Sterriker, James; and Schlechter, George, 4,452,024, Cl. 52-473.000.
Inland Craft Products Co.: *See*—
Kaniarz, Alan, 4,451,981, Cl. 30-123.300.
Inoue, Hiromichi; Inukai, Takashi; and Goto, Yasuyuki, to Chisso Corporation. 4-(Trans-4'-alkyloxymethylcyclohexyl)benzoic acid esters. 4,452,719, Cl. 252-299.630.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,453,069, Cl. 219-69.00P.
Inoue, Kensuke: *See*—
Suzuki, Taihei; and Inoue, Kensuke, 4,453,210, Cl. 364-200.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Pulse forming circuit arrangement and method. 4,453,069, Cl. 219-69.00P.
Inoue, Takao; Maeda, Yukio; and Uchida, Masami, to Matsushita Electric Industrial Co., Ltd. Disc coating method. 4,452,819, Cl. 427-54.100.
Institute of Gas Technology: *See*—
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Boden, Richard M.; and Licciardello, Michael, 4,452,730, Cl. 252-522.00R.
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Boetto, Charles, 4,452,318, Cl. 172-311.000.
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Maier, Bruce R.; and Risch, Jon M., 4,452,480, Cl. 294-104.000.
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Marrion, Alistair R.; Roy, Susan; and Rowe, Frank E., 4,452,948, Cl. 525-207.000.
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Duff, Raymond J.; Tower, Steven A.; and Greenspan, Jay S., 4,453,033, Cl. 174-52.0FP.
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Eichberger, Walter; and Blaschke, Alfred, 4,452,831, Cl. 427-348.000.
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Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Power control system for a turbocharged internal combustion engine. 4,452,044, Cl. 60-600.000.
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Speers, Leonard E.; and Redenbarger, Philip D., 4,452,559, Cl. 414-710.000.
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Love, Ronald B., 4,452,605, Cl. 8-494.000.
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Jackson, Kenneth; and Pickett, Nigel P., to Imperial Chemical Industries Limited. Method and apparatus for reducing the dead-time of a Geiger-Muller, gamma-ray detector tube. 4,453,076, Cl. 250-374.000.
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James, David R., 4,451,944, Cl. 5-61.000.
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Janson, Helmut, to Kilian & Co. GmbH. Apparatus for producing tablets. 4,452,579, Cl. 425-140.000.
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Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.
Japan Exlan Co., Ltd.: *See*—
Obama, Isamu; and Yamamoto, Yoshihisa, 4,452,860, Cl. 428-367.000.
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Jarrard, George A. Trunk lid folding table. 4,452,151, Cl. 108-44.000.
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John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., to Clear Air, Inc. Incinerator steam generation system. 4,452,152, Cl. 110-235.000.
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Johnson, Ewing A.; and Straight, Paul E. Electrical balancing control for three-phase loads. 4,453,122, Cl. 323-300.000.
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Johnson, Jack E.; Loyd, Ronald C.; and Fodness, William, to Emerson Electric Co. Plastic flexible shaft support. 4,451,983, Cl. 30-276.000.
Johnson, James D.; and Banitt, Elden H., to Riker Laboratories, Inc. Phenolic derivative. 4,452,983, Cl. 546-233.000.
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Smyth, Harold T., 4,452,622, Cl. 65-2.000.
Johnson, Richard E.; Williams, Roger O.; Higgins, Ronald W.; and Lewis, David M., to Amlyn Corporation. Disk drive. 4,453,188, Cl. 360-78.000.
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Jones, Alun G.; Davison, Alan; and Abrams, Michael J., to President and Fellows of Harvard College; and Massachusetts Institute of Technology. Isonitrile radionuclide complexes for labelling and imaging agents. 4,452,774, Cl. 424-1.100.
Jones, Bruna. Stretcher frame for holding fabric. 4,451,997, Cl. 38-102.200.
Jones, Gordon R.: *See*—
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Jones, John P., Jr., to Mobil Oil Corporation. Ullage tape winder. 4,451,986, Cl. 33-126.500.
Joseph, Eric D., to Motorola, Inc. Comparator circuit having reduced input bias current. 4,453,092, Cl. 307-355.000.
Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, to PCUK Produits Chimiques Ugine Kuhlmann. Process for the meta-hydroxylation of alkylphenols and the ethers thereof in a superacidic medium. 4,453,024, Cl. 568-768.000.
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Joubert, Michael D., to Joubert & Joubert Proprietary Limited. Flexible polyurethane foams having junction modifying particulate additives. 4,452,920, Cl. 521-109.100.
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Jung, Chu W.: *See*—
Au, Andrew T.; and Jung, Chu W., 4,453,016, Cl. 568-432.000.
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Jurgens, Rainer, to Christensen, Inc. Drilling device for drilling a core in deep drill holes. 4,452,322, Cl. 175-107.000.
Jurgens, Rainer, to Christensen, Inc. Rotary drill bit. 4,452,324, Cl. 175-393.000.
Justiss, Jimmy D., to GK Technologies, Inc. Multi-compartment screened telephone cables. 4,453,031, Cl. 174-36.000.
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Terai, Akio; Miyauchigo, Takashi; and Ota, Hiroshi, 4,452,479, Cl. 294-88.000.

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Takeuchi, Shin; and Osodera, Kenji, 4,452,137, Cl. 101-93.220.

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Kadota, Shinkichi, to Nissan Motor Company, Ltd.; and Rhythm Motor Parts Mfg. Co., Ltd. Hydraulic pressure control valve for a dual-circuit hydraulic braking system. 4,452,494, Cl. 303-6.00C.

Kaether, Willy. Method for reducing the liquid content of sugar cane bagasse. 4,452,641, Cl. 127-43.000.

Kagerhuber, Franz: *See*—
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Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, 4,452,203, Cl. 123-403.000.

Kaminsky, Theo, to Santrade Ltd. Adjusting drive for the cutting edge of a tool. 4,452,553, Cl. 408-162.000.

Kamiya, Soji; and Muraki, Takeshi, to Taiho Kogyo Co., Ltd. Aluminum-based alloy bearing. 4,452,866, Cl. 428-653.000.

Kamlet, Mortimer J.: *See*—
Cichra, Dorothy A.; Adolph, Horst G.; and Kamlet, Mortimer J., 4,452,739, Cl. 260-239.0BC.

Kamo, Takashi: *See*—
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Kamoshita, Katsuzo: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,452,981, Cl. 544-236.000.

Kamuro, Setsufumi: *See*—
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Kanbe, Junichiro: *See*—
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Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,452,875, Cl. 430-57.000.

Kane, John P.: *See*—
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Kaneko, Kenji, to Victor Company of Japan, Ltd. Bi-phase space code data signal reproducing circuit. 4,453,157, Cl. 340-347.0DD.

Kaneko, Masaharu: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.

Kaniarz, Alan, to Inland Craft Products Co. Glass cutter. 4,451,981, Cl. 30-123.300.

Kankkunen, Matti K. Safety device for lowering persons and loads. 4,452,430, Cl. 254-391.000.

Kano, Hitae; Suzuki, Hideo; and Nakao, Hideo, to Nissan Motor Company, Limited. Automobile roof structure. 4,452,483, Cl. 296-213.000.

Kanzaki, Minoru: *See*—
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Kapeghian, Charles L.: *See*—
Askinazi, Martin; McManus, Liam; Malnati, Paul R.; and Kapeghian, Charles L., 4,453,211, Cl. 364-200.000.

Kaplan, Jonathan I., to Polaroid Corporation. Lever for folding a camera having a retractable light source. 4,452,520, Cl. 354-126.000.

Kaplan, Paul: *See*—
Clausen, Victor H.; and Kaplan, Paul, 4,452,837, Cl. 428-35.000.

Karanewsky, Donald S.; and Petrillo, Edward W., Jr., to E. R. Squibb & Sons, Inc. Phosphonyl hydroxyacyl amino acid derivatives as antihypertensives. 4,452,790, Cl. 424-200.000.

Kardas, Alan, to Institute of Gas Technology. Reactive impeller for pressurizing hot flue gases. 4,452,566, Cl. 415-81.000.

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Okamoto, Fumio; and Kato, Katsuhiro, 4,452,861, Cl. 428-402.240.

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Kato, Kiichi: *See*—
Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, 4,453,239, Cl. 369-45.000.

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Suzuki, Michio; Terada, Matsuaki; Kato, Takao; and Toki, Ryuichi, 4,453,247, Cl. 370-94.000.

Katoh, Michio: *See*—
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

Katoh, Toshio: *See*—
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.

Katou, Hiromi: *See*—
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.

Katsuyama, Harumi: *See*—
Kitajima, Masao; Arai, Fuminori; and Katsuyama, Harumi, 4,452,887, Cl. 435-14.000.

Kaukanen, Esko: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; Jarnefelt, Johan; Kaukanen, Esko; and Partanen, Paul, 4,452,902, Cl. 436-517.000.

Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, to GAO Gesellschaft fur Automation und Organisation mbH. Security paper. 4,452,843, Cl. 428-199.000.

Kawaguchi, Susumu: *See*—
Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, 4,452,571, Cl. 417-286.000.

Kawahara, Akira, to Ryusyo Industrial Co., Ltd. Clasping device. 4,451,956, Cl. 24-68.0CD.

Kawai, Hisasi: *See*—
Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.

Kawakami, Yoshio: *See*—
Takizawa, Masahiro; Kawakami, Yoshio; and Kajimoto, Noribumi, 4,452,863, Cl. 428-423.100.

Kawamura, Masaharu: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, 4,452,522, Cl. 354-289.120.

Kawamura, Yoshihisa; Shioyama, Giichi; Nakagawa, Toyoaki; and Nakajima, Masao, to Nissan Motor Company, Limited. Exhaust gas recirculation control system for a diesel engine and control method therefor. 4,452,217, Cl. 123-571.000.

Kawasaki Steel Corporation: *See*—
Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, 4,452,634, Cl. 75-93.00R.
Yoshioka, Keiichi; Kinoshita, Noboru; and Ono, Yutaka, 4,452,649, Cl. 148-37.000.

Kawasaki, Yuichi; Tanaka, Sumio; Iwahashi, Hiroshi; Asano, Masamichi; Maekawa, Shinichi; and Mito, Masazi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor integrated circuit device with non-volatile semiconductor memory cells and means for relieving stress therein. 4,453,174, Cl. 357-41.000.

Kawashima, Nobuyuki: *See*—
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.

Kawata, Shoji, to Aisin Seiki Kabushiki Kaisha. Electromagnetic linear control valve. 4,452,424, Cl. 251-129.000.

Kawauchi, Susumu; Honda, Junji; Nishikawa, Kiyoaki; and Tsuji, Masahiro, to Nihon Kogyo Kabushiki Kaisha. Copper alloy for radiators. 4,452,757, Cl. 420-471.000.

Kay, Ronald D. Safety closure device for medicine container. 4,452,364, Cl. 215-253.000.

Kazama, Toyoki: *See*—
Namba, Masaharu; Yamauchi, Mitsuru; and Kazama, Toyoki, 4,452,828, Cl. 427-39.000.

Keating, Edward J., to General Motors Corporation. High squish dual swirl engine combustion chamber. 4,452,221, Cl. 123-661.000.

Kebbel, Waldemar S.: *See*—
Geurtsen, Friedrich H. H.; Kebbel, Waldemar S.; and Meyer, Manfred, 4,452,659, Cl. 156-361.000.

Kedrowski, Thomas J.: *See*—
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., 4,452,725, Cl. 252-500.000.

Keenan, James P., to GTE Products Corporation. Long life tungsten halogen lamp with hydrogen bromide and methyl bromide. 4,453,107, Cl. 313-579.000.

Keesling, James E.: *See*—
Harder, Joseph R.; and Keesling, James E., 4,452,752, Cl. 264-555.000.

Kelland, Martin J., to U.S. Philips Corporation. AFC System for controlling an oscillator according to an input frequency. 4,453,136, Cl. 331-1.00A.

Keller, Harold E.: *See*—
Fishbaugh, Byron L.; Keller, Harold E.; and Van Der Aue, John P., 4,452,591, Cl. 464-89.000.

Keller, J. Walter, Jr. Bidirectional pacemaker. 4,452,248, Cl. 128-419.0PG.

Keller, Jed V.: *See*—
Ritchie, Kim; and Keller, Jed V., 4,453,199, Cl. 361-306.000.

Keller, William F.; and Sibley, Richard D., to Koso International, Inc. Manual-hydraulic actuator. 4,452,125, Cl. 91-189.00A.

Kelley, Timothy A.; and Mather, Pamela K. Spring-rodless hingeless ventilator. 4,452,129, Cl. 98-2.180.

Kelly, Patrick J.; and Hackett, Robert D., to McDonnell Douglas Corporation. Nozzle assembly for a reaction engine. 4,452,395, Cl. 239-265.150.

Kelman, Charles D. Intraocular lens and method of positioning the same in an eye. 4,451,938, Cl. 3-13.000.

Kendall Company, The: *See*—
Peterson, James J.; and Taylor, Glenn N., 4,452,253, Cl. 128-766.000.
Wichman, Cynthia A., 4,451,931, Cl. 2-51.000.

Kent, John S., to Syntex (U.S.A.) Inc. Cholesterol matrix delivery system for sustained release of macromolecules. 4,452,775, Cl. 424-19.000.

Keogh, Michael J., to Union Carbide Corporation. Ethylene polymer compositions stabilized against water treeing and electrical treeing by an organo titanium chelate; and the use thereof as insulation about electrical conductors. 4,452,937, Cl. 524-398.000.

Kern, Josef: *See*—
Even, Gert; Kern, Josef; and de Ruiter, Ernest, 4,452,850, Cl. 428-252.000.

Kern, Peter W.; and Richter, James J., to Parker-Hannifin Corporation. Crimp-type clamp. 4,451,955, Cl. 24-20.0CW.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Dietz, Karl J.; and Waelbroeck, Francois, 4,452,642, Cl. 134-1.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Blasius, Ewald; and Nilles, Karl-Heinz, 4,452,702, Cl. 210-638.000.

Kerotest Manufacturing Corp.: *See*—
Owoc, James R., 4,452,426, Cl. 251-335.00B.

Kerr, Ronald R., to Teledyne Industries, Inc. In handle dispensing device. 4,452,238, Cl. 128-66.000.

Kesten, Martin, to Preston Engravers, Inc. Assembly for rotary die cutting utilizing a shaftless roll. 4,452,116, Cl. 83-346.000.

Key Tech Corporation: *See*—
Carstens, Ronald, 4,452,723, Cl. 252-313.00S.

Khomeriki, Otar K.: *See*—
Norakidze, Georgy G.; Sakandelidze, Ramaz M.; Sitnikov, Eduard K.; and Khomeriki, Otar K., 4,453,148, Cl. 335-205.000.

Khoroshikh, Vladimir M.: *See*—
Axenov, Ivan I.; Belous, Vitaly A.; Padalka, Valentin G.; and Khoroshikh, Vladimir M., 4,452,686, Cl. 204-298.000.

Khudyakov, Nikolai G.: *See*—
Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., 4,452,946, Cl. 524-541.000.

Kida, Takao; Ishikawa, Takehiko; and Shibai, Hiroshiro, to Ajinomoto Company Incorporated. Method for production of mycophenolic acid by fermentation. 4,452,891, Cl. 435-126.000.

Kidera, Teruo: *See*—
Kohyama, Katsuhisa; Matsuno, Akira; Kidera, Teruo; and Tsuruhara, Kenji, 4,452,976, Cl. 528-491.000.

Kievsky Politekhnichesky Institut: *See*—
Vishnevsky, Valdimir S.; Kartashev, Igor A.; Lavrinenko, Vyacheslav V.; Boichenko, Oleg L.; Koval, Vitaly S.; Golovyashin, Jury V.; Serov, Nikolai F.; Shinkarenko, Leonid I.; and Jurash, Oleg G., 4,453,103, Cl. 310-323.000.

Kilian & Co. GmbH: *See*—
Janson, Helmut, 4,452,579, Cl. 425-140.000.

Killen, Howard R.: *See*—
Mazur, Richard J.; Tomczak, Lawrence W.; Momin, Salim A.; and Killen, Howard R., 4,452,201, Cl. 123-339.000.

Kim, Leo: *See*—
Muhlbauer, Gerhard; Kagerhuber, Franz; Glatz, Werner; Felbermayer, Erich; and Kim, Leo, 4,452,433, Cl. 266-142.000.

Kim, Syng N., to Wico Corporation. Switch blade cover. 4,453,060, Cl. 200-302.100.

Kimura, Katsuhiro; Endo, Akira; Shibata, Takanori; and Morozumi, Hiroshi, to Hitachi, Ltd. Microwave alcohol fuel sensor. 4,453,125, Cl. 324-58.50A.

Kimura, Keiichi: *See*—
Suzuki, Akira; Shioya, Yasumi; and Kimura, Keiichi, 4,452,699, Cl. 210-608.000.

Kimura, Yoshio: *See*—
Shinbori, Takeyoshi; and Kimura, Yoshio, 4,452,435, Cl. 267-36.00A.

Kindermann, Wolfgang, to Kraftwerk Union. Electrohydraulic actuating drive for valves. 4,452,269, Cl. 137-338.000.

Kindlmann, Peter J.: *See*—
Ungarean, Gary L.; Yarwood, John C.; Kindlmann, Peter J.; and Tyler, Derek E., 4,452,297, Cl. 164-467.000.

King-Seeley Thermos Co.: *See*—
Nelson, Kenneth L., 4,452,049, Cl. 62-74.000.

Kinoshita, Noboru: *See*—
Yoshioka, Keiichi; Kinoshita, Noboru; and Ono, Yutaka, 4,452,649, Cl. 148-37.000.

Kinoshita, Takahiko: *See*—
Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, 4,452,203, Cl. 123-403.000.

Kioritz Corporation: *See*—
Satoh, Masatoshi, 4,451,951, Cl. 15-330.000.

Kipp, Robert M., to Shell Oil Company. Testing casing connectors. 4,452,070, Cl. 73-49.800.

Kirabayashi, Hajime: *See*—
Matsushima, Noriaki; Saeki, Yukio; and Kirabayashi, Hajime, 4,452,926, Cl. 523-145.000.

Kirschner, Thomas F., to RCA Corporation. Video disc player having caddy overtravel mechanism. 4,453,240, Cl. 369-77.200.

Kirst, Herbert A.; and Toth, John E., to Eli Lilly and Company. C-23-Modified derivatives of DMT. 4,452,784, Cl. 424-180.000.

Kish, Robert J.: *See*—
Kolvek, Robert E.; Bronke, Henry R.; Foit, Nicholas W., Jr.; and Kish, Robert J., 4,452,749, Cl. 264-30.000.

Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, to Mitsubishi Rayon Co., Ltd. Thermoplastic acrylic resin composition. 4,452,941, Cl. 525-66.000.

Kitaguchi, Hiroshi: *See*—
Nozawa, Yasushi; Kokubo, Tadayoshi; Itoh, Isamu; and Kitaguchi, Hiroshi, 4,452,885, Cl. 430-614.000.

Kitahra, Yoshimi; Fukuda, Kazumasa; and Maruta, Fumio, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,452,864, Cl. 428-611.000.

Kitajima, Masao; Arai, Fuminori; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Integral multi-layered element containing glucose oxidase for determining glucose. 4,452,887, Cl. 435-14.000.

Kitamura, Masami: *See*—
Shirakawa, Kenzo; Yamada, Norio; Kitamura, Masami; Yasunaka, Shinsaku; and Matsumoto, Masao, 4,451,980, Cl. 30-41.000.

Kite, Oliver A.: *See*—
Garrett, Michael E.; and Kite, Oliver A., 4,452,701, Cl. 210-627.000.

Kiyoshima, Satoshi: *See*—
Ogino, Saburo; Taniguchi, Yoshitomo; and Kiyoshima, Satoshi, 4,452,266, Cl. 137-15.100.

Kiyota, Takao: *See*—
Uchida, Takateru; Noguchi, Kohji; and Kiyota, Takao, 4,452,918, Cl. 521-52.000.

Klacik, Kenneth J.; Vink, Walter V.; and Fronczkowski, Paul R., to Nabisco Brands, Inc. Sorbitol-containing hard candy. 4,452,825, Cl. 426-658.000.

Klawitter, Jerome J., to Hemex, Inc. Heart valve having ear guided occluders. 4,451,937, Cl. 3-1.500.

Klein, Joseph T.: *See*—
Effland, Richard C.; and Klein, Joseph T., 4,452,803, Cl. 424-267.000.

Klein, Peter. Electrical apparatus useful to prepare a hot beverage. 4,452,130, Cl. 99-307.000.

Kletsel, Mark Y.; Polyakov, Valentin E.; Novozhilov, Alexandr N.; Solodukhin, Ivan N.; Chepeljuk, Yakov Z.; and Baida, Dmitry F., to Pavlodarsky Industrialny Institut. Method of short circuit protection of electrical three-phase machine and device therefor. 4,453,190, Cl. 361-31.000.

Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H.; and Covell, L. David, a part interest. Surgical stapler. 4,452,357, Cl. 206-339.000.

Klieman, Charles H.; and Densmore, Richard M., to Klieman, Charles H. Hemostatic clip applicator. 4,452,376, Cl. 221-198.000.

Klinedinst, Keith A.; and Gary, Richard A., to GTE Laboratories Incorporated. Electrochemical cell. 4,452,872, Cl. 429-105.000.

Klinkmann, Kurt; and Wambach, Paul R., deceased (by Wambach, Christa, legal representative), to Bayer Aktiengesellschaft. Process for purifying the methanol employed in the preparation of formaldehyde. 4,453,020, Cl. 568-473.000.

Kljuev, Vladimir V.: *See*—
Klochko, Viktor A.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; Kljuev, Vladimir V.; and Kovalsky, Vadim N., 4,452,066, Cl. 73-12.000.

Klochko, Viktor A.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; Kljuev, Vladimir V.; and Kovalsky, Vadim N. Device for measuring dynamic characteristics of objects under impact. 4,452,066, Cl. 73-12.000.

Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., to S.A. PRB Societe Anonyme. Propellant for base-bleed gas generators and process for manufacturing it. 4,452,145, Cl. 102-501.000.

Kloss, Herbert: *See*—
Roth, Dieter; Schorb, Herbert; and Kloss, Herbert, 4,453,249, Cl. 371-37.000.

Kneissl, Hannes; and Schmid, Klaus. Process for the hydrogenation of heavy oils. 4,452,692, Cl. 208-108.000.

Knoblauch, Karl; Richter, Ekkehard; Grochowski, Horst; and Schwarte, Jurgen, to Foster Wheeler Energy Corporation. Method of producing sulfur from SO_2-containing gases. 4,452,772, Cl. 423-569.000.

Kobashi, Kiyoshi, to Toyota Jidosha Kabushiki Kaisha. Soot catcher purgative diesel engine fuel supply method and apparatus. 4,452,040, Cl. 60-274.000.

Kobayashi, Waichi: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; Okabayashi, Shigeo; and Ichinose, Hidefumi, 4,452,637, Cl. 106-89.000.

Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, to Showa Denko K.K. Process for producing a gel-like composition of a high polymer of acetylene, and process for molding said composition. 4,452,959, Cl. 526-159.000.

Koch, Bernhard, to Grob & Co. Aktiengesellschaft. Weaving reed having a plurality of reed dents. 4,452,283, Cl. 139-192.000.

Koch, Kay F.; and Kastner, Ralph E., to Eli Lilly and Company. A-39183 Antibiotics and process for production thereof. 4,452,741, Cl. 260-351.000.

Kochevar, Rudolph J. Article weighting method. 4,452,456, Cl. 273-169.000.

Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, to Mitsubishi Denki Kabushiki Kaisha. Multiple cylinder rotary compressor. 4,452,571, Cl. 417-286.000.

Kodama, Naoki; Suzuki, Ryo; Takeshita, Masatoshi; and Sugita, Yutaka, to Hitachi, Ltd. Magnetic bubble memory. 4,453,231, Cl. 365-36.000.

Koehler, Raymond A.: *See*—
Benson, Henry E.; and Koehler, Raymond A., 4,452,656, Cl. 156-174.000.

Koel, Gerrit J.; and Kuijk, Karel E., to U.S. Philips Corporation. Device for generating magnetic bubbles with a high bit rate. 4,453,232, Cl. 365-41.000.

Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Schamberg, Eckehard, to Th. Goldschmidt AG. Process for the synthesis of heat-curable silicone resins. 4,452,961, Cl. 528-26.000.

Koff, Dennis K.: *See*—
Bader, Robert F.; and Koff, Dennis K., 4,452,246, Cl. 128-340.000.

Koga, Fumio: *See*—
Nagai, Hideo; and Koga, Fumio, 4,452,366, Cl. 220-4.00R.

Koga, Satoru: *See*—
Chiba, Takashi; and Koga, Satoru, 4,453,216, Cl. 364-200.000.

Kogure, Shigeru, to Kabushiki Kaisha Suwa Seikosha. Mode coupled quartz crystal tuning fork. 4,453,105, Cl. 310-361.000.

Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Focusing system for eye-ground camera. 4,452,517, Cl. 351-206.000.

Kohler Co.: *See*—
Bauer, Michael E., 4,453,120, Cl. 322-28.000.

Kohn, Rachel S., to Celanese Corporation. Benzoquinone ether adduct of polygalactomannan gum. 4,452,639, Cl. 106-205.000.

Kohno, Hideki: *See*—
Munakata, Chusuke; and Kohno, Hideki, 4,453,181, Cl. 358-101.000.

Kohyama, Katsuhisa; Matsuno, Akira; Kidera, Teruo; and Tsuruhara, Kenji, to Mitsubishi Chemical Industries Ltd. Process for producing aromatic polyester polycarbonate particles. 4,452,976, Cl. 528-491.000.

Koizumi, Morimasa: *See*—
Nishijima, Masayuki; Koizumi, Morimasa; and Matsuda, Minoru, 4,452,859, Cl. 428-340.000.

Kojima, Tadashi: *See*—
Hoshimi, Susumu; and Kojima, Tadashi, 4,453,250, Cl. 371-40.000.
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,453,260, Cl. 375-116.000.

Kok, Bernardus H.: *See*—
Bontje, Theodorus P. M.; Schuldink, Gerrit; Heetbrink, Gerrit H.; de Putter, Warner J.; and Kok, Bernardus H., 4,452,303, Cl. 165-142.000.

Kokosi, Jozsef: *See*—
Hermecz, Istvan; Breining, Tibor; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Kokosi, Jozsef, 4,452,982, Cl. 544-282.000.

Kokubo, Tadayoshi: *See*—
Nozawa, Yasushi; Kokubo, Tadayoshi; Itoh, Isamu; and Kitaguchi, Hiroshi, 4,452,885, Cl. 430-614.000.

Kolev, Kolyo T.; Peeva, Lilly B.; Djakov, Assen E.; Yankov, Rossen A.; Amov, Blagoy G.; and Stoyanov, Stoyan B., to Institute Za Yadreni Izsledvaniya I Yadrena Energetika. Method for surface modification of synthetic artificial and natural polymers and polymer compositions using metals, non-metals and gases. 4,452,827, Cl. 427-38.000.

Koller, Josef: *See*—
Pustener, Alois; Koller, Josef; and Beffa, Fabio, 4,452,602, Cl. 8-404.000.

Kolvek, Robert E.; Bronke, Henry R.; Foit, Nicholas W., Jr.; and Kish, Robert J., to Modern Refractories Service Corp.; National Steel Corp.; and Republic Steel Corp. Method of repairing hot refractory brick walls. 4,452,749, Cl. 264-30.000.

Komarom Megyei Tanacsi Tervezo Iroda: *See*—
Balogh, Akos; and Szeher, Laszlo, 4,452,548, Cl. 405-52.000.

Komiya, Kazumi; and Kanzaki, Minoru, to Nippon Telegraph & Telephone Public Corporation. Image sensor. 4,453,187, Cl. 358-213.000.

Komori, Haruyuki: *See*—
Urushihara, Koji; Okada, Yoshihito; and Komori, Haruyuki, 4,452,418, Cl. 248-666.000.

Kona Associates Limited Partnership: *See*—
O'Brien, Mark J., 4,452,461, Cl. 273-426.000.

Kondo, Yasuo: *See*—
Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, 4,452,203, Cl. 123-403.000.

Koninklijke Bos Kalis Westminster Group N.V.: *See*—
Hofmeester, Paul M., 4,452,550, Cl. 405-154.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Seino, Minoru; Yamazaki, Atsuo; Aoki, Toru; and Suzuki, Akihiko, 4,452,880, Cl. 430-309.000.

Kono, Hiroshi; and Asao, Haruhiko, to Onahama Seiren Kabushiki Kaisha. Process and apparatus for dry distillation of discarded rubber tires. 4,452,154, Cl. 110-346.000.

Konrad, Eugen; Husemeyer, Hans; and Mager, Herbert, to Wella Aktiengesellschaft. Process for dyeing hair and composition therefor. 4,452,603, Cl. 8-405.000.

Konstantinov, Vladimir A.: *See*—
Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.

Konter, Wolfgang: *See*—
Musch, Rudiger; Gobel, Wilhelm; Muller, Eberhard; and Konter, Wolfgang, 4,452,947, Cl. 525-194.000.

Kopcsay, Gerard V.: *See*—
Chance, Dudley A.; and Kopcsay, Gerard V., 4,453,176, Cl. 357-51.000.

Koppensteiner, James V., to GTE Automatic Electric Labs Inc. Printed wiring card stiffener bracket. 4,452,359, Cl. 211-41.000.

Koppers Company, Inc.: *See*—
Kovacic, Joseph E.; Perch, Michael; and Kuchta, Bernard R., 4,452,670, Cl. 201-6.000.

Kornienko, Vladimir M.: *See*—
Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., 4,452,946, Cl. 524-541.000.

Kort, Willy J.; Bonta, Ivan L.; Adolfs, Martinus J. P.; and Westbroek, Dirk L., to Erasmus Universiteit Rotterdam. Medicine having transplant rejection and/or immunological inflammation inhibiting activities, as well as a method for inhibiting transplant rejection and/or immunological inflammation. 4,452,794, Cl. 424-240.000.

Koski, Erkki; and Tapio, Olli, to Valmet Oy. Multi-nip press portion of a paper or cardboard machine. 4,452,669, Cl. 162-305.000.

Kosley, Raymond W., Jr.; and Cherill, Robert J., to Hoechst-Roussel Pharmaceuticals Incorporated. Antihypertensive spiro[benzofuran-azalkanes]. 4,452,802, Cl. 424-267.000.

Koso International, Inc.: *See*—
Keller, William F.; and Sibley, Richard D., 4,452,125, Cl. 91-189.00A.

Kostors, Charles H.: *See*—
Miller, Arthur J.; and Kostors, Charles H., 4,451,959, Cl. 29-156.80R.

Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, to Nippon Soken, Inc. Apparatus for controlling feed of oil discharged from oil pump. 4,452,188, Cl. 123-90.180.

Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic valve lift device. 4,452,187, Cl. 123-90.160.

Kotani, Hirokazu: *See*—
Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, 4,452,897, Cl. 435-280.000.

Kou, Abraham H.; Busby, Michael G.; Polenske, Errol E.; and Peickert, Wilfried R., to Airco, Inc. Ultrasonic flowmeter. 4,452,090, Cl. 73-861.280.

Kovac, Ervin. Apparatus for collection of dust and soot by wetting. 4,452,614, Cl. 55-220.000.

Kovach, Bruce F. Piano tuning mutes. 4,452,122, Cl. 84-458.000.

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Klochko, Viktor A.; Rygalin, Viktor G.; Grechinsky, Dmitry A.; Kljuev, Vladimir V.; and Kovalsky, Vadim N., 4,452,066, Cl. 73-12.000.

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Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakato, Hiromi, 4,452,530, Cl. 355-75.000.

Kraft, Russell H.: *See*—
Annas, Nick S.; and Kraft, Russell H., 4,453,034, Cl. 174-79.000.

Krafthefer, Brian C.; and Strand, Rolf L., to Honeywell Inc. Vibration isolating motor mount. 4,452,417, Cl. 248-604.000.

Kraftwerk Union: *See*—
Kindermann, Wolfgang, 4,452,269, Cl. 137-338.000.

Trassl, Werner, 4,452,422, Cl. 251-25.000.
Kramer, Wolfgang: *See*—
Lurssen, Klaus; Holmwood, Graham; Kramer, Wolfgang; Regel, Erik; Reiser, Wolf; and Schroder, Rolf, 4,452,625, Cl. 71-76.000.
Krause, Werner: *See*—
Gradl, Reinhard; Schimmel, Gunther; Krause, Werner; and Heymer, Gero, 4,452,768, Cl. 423-321.00R.
Kreisel, Rudolf; and Meyer, Walter, to Schering Aktiengesellschaft. Rinsing of articles to remove an adhering substance. 4,452,264, Cl. 134-58.00R.
Kretzschmar, Wolfgang: *See*—
Conrad, Horst; Kretzschmar, Wolfgang; and Murray, Peter E., 4,452,504, Cl. 339-263.00R.
Kroll, Dieter: *See*—
Ballach, Reinhold; Kroll, Dieter; and Rinn, Jurgen, 4,452,109, Cl. 82-3.000.
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Christ, Richard; Wegner, Klaus; and Kroll, Hartmut, 4,453,081, Cl. 250-506.100.
Krone GmbH: *See*—
Forberg, Horst; and Muller, Manfred, 4,452,502, Cl. 339-99.00R.
Krug, William P.: *See*—
Gibbard, Henry F.; Krug, William P.; Darling, Stephen D.; and Beranek, Mark W., 4,452,868, Cl. 429-21.000.
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Goodrich, Robert R.; Krumreich, Charles L.; and O'Connor, Robert J., 4,451,948, Cl. 7-107.000.
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Voges, Bernd, 4,452,586, Cl. 432-30.000.
Kubo, Yoichiro; and Oura, Kiyomori, to Nippon Zeon Co. Ltd. Process for hydrogenating conjugated diene polymers. 4,452,951, Cl. 525-339.000.
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Zapf, Otto; and Kuchinke, Josef, 4,452,486, Cl. 297-343.000.
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Kuehl, Guenter H.: *See*—
Chu, Pochen; and Kuehl, Guenter H., 4,452,769, Cl. 423-329.000.
Kuhn, Franz-Josef: *See*—
Losel, Walter; Roos, Otto; Reichl, Richard; and Kuhn, Franz-Josef, 4,452,789, Cl. 424-258.000.
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Neuerburg, Horst, 4,452,034, Cl. 56-320.100.
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Koel, Gerrit J.; and Kuijk, Karel E., 4,453,232, Cl. 365-41.000.
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Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., 4,452,660, Cl. 156-422.000.
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Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.
Kuplas, Harbey, to Hoover Company, The. Suction cleaners with a bag transfer arrangement. 4,452,618, Cl. 55-362.000.
Kuroiwa, Katsumasa: *See*—
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,452,736, Cl. 260-112.50R.
Kurshin, Nikolai M.: *See*—
Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.
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Kuzma, Petr; and Odorisio, Giovanina, to National Patent Development Corporation. Biologically stabilized compositions comprising collagen as the minor component with ethylenically unsaturated compounds used as contact lenses. 4,452,925, Cl. 523-106.000.
Kwik-Way Manufacturing Company: *See*—
Anderson, Vyron E., 4,452,111, Cl. 82-4.00A.
Kwong, Cecil D.: *See*—
Friedman, Lester A.; Kwong, Cecil D.; and Faulkner, James D., 4,452,709, Cl. 252-8.900.
Kyburz, Emilio: *See*—
Aschwanden, Werner; and Kyburz, Emilio, 4,452,807, Cl. 424-274.000.
Kyushu Hitachi Maxell, Ltd.: *See*—
Shimazu, Hiroshi, 4,451,984, Cl. 30-346.520.
Laan, Dirk. Building elements containing cement and spheres of expanded, porous foamed resin. 4,452,636, Cl. 106-76.000.
Labaar, Frederik, to Ford Aerospace & Communications Corporation. Frequency offset multiple cavity power combiner. 4,453,139, Cl. 331-47.000.
Labsystems Oy: *See*—
Suovaniemi, Osmo A.; Ekholm, Pertti; Jarnefelt, Johan; Kaukanen, Esko; and Partanen, Paul, 4,452,902, Cl. 436-517.000.
Lacefield, William B.; and Simon, Richard L., to Eli Lilly and Company. 9-Aminoalkylfluorenes. 4,452,745, Cl. 260-465.00E.
LaCroix, J. Scott: *See*—
Lepley, Chelsea; and LaCroix, J. Scott, 4,452,447, Cl. 272-96.000.
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Laemmle, Joseph T., to Aluminum Company of America. Metalworking with an aqueous synthetic lubricant containing polyoxypropylene-polyoxyethylene-polyoxypropylene block copolymers. 4,452,712, Cl. 252-49.300.
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Shirley, Richard L., 4,453,168, Cl. 346-117.00A.
La Fiandra, Carlo, to Perkin-Elmer Corporation, The. Compression base lamp. 4,453,106, Cl. 313-331.000.
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Zielinski, Lech S.; Lafrance, Conrad; and Wojcik, Jacek J., 4,453,043, Cl. 179-90.0BD.
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Lagow, Richard J. Perfluorinated compounds with cyclohexyl groups. 4,453,028, Cl. 570-130.000.
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Lamont, Vincent G.: *See*—
Hernick, Jack F.; and Lamont, Vincent G., 4,452,340, Cl. 187-8.430.
Lancaster, Michael V.: *See*—
Flegal, Philip B.; Lancaster, Michael V.; and Hanney, William W., III, 4,453,220, Cl. 364-413.000.
Landwide Foods, Inc.: *See*—
Connolly, James M.; Morley, Robert G.; and Ashton, W. Ronald, 4,452,823, Cl. 426-115.000.
Lane, Ernest: *See*—
Carpentier, Alain; and Lane, Ernest, 4,451,936, Cl. 3-1.500.
Lang, Gusztav: *See*—
Leibhard, Erich; Herb, Armin; Bergner, Arndt; and Lang, Gusztav, 4,452,285, Cl. 141-392.000.
Lange, Francois; and Rascle, Roger, to Thomson-CSF. Process for obtaining a copy disk from an original recording carried by a matrix. 4,452,748, Cl. 264-25.000.
Langensiepen, Gert; and Bruning, Werner, to Alfred Fischbach KG Kunststoff-Spritzgusswerk. Bottom closure for container. 4,452,370, Cl. 220-93.000.
Langer, Heimo J.: *See*—
Gruber, Bruce A.; Langer, Heimo J.; and Dunnavant, William R., 4,452,299, Cl. 164-521.000.
Langpape, Reinhart, to Brown, Boveri & Cie A.G. Electrochemical storage cell. 4,452,870, Cl. 429-104.000.
Larsen, Glenn L.; and Patrin, Jerold F., to Toro Company, The. Engine housing. 4,452,185, Cl. 123-41.580.
Larson, Vivian M.; and Lehman, E. Dale, to Merck & Co., Inc. Herpes subunit vaccine. 4,452,734, Cl. 260-112.00R.
Last, Daniel F.; and Roth, Robert H., to General Motors Corporation. Air conditioning and heating system air temperature control arrangement. 4,452,301, Cl. 165-42.000.
Lathwell, Dennis C.: *See*—
Jackson, Douglas H.; Madley, Jack R.; and Lathwell, Dennis C., 4,452,680, Cl. 204-181.00R.
Latsch, Reinhard; and Maurer, Helmut, to Robert Bosch GmbH. Separately ignited internal combustion engine with at least one main combustion chamber and an ignition chamber assigned to it. 4,452,189, Cl. 123-143.00B.
Laudenbach, Karl: *See*—
Huschelrath, Gerhard; and Laudenbach, Karl, 4,452,086, Cl. 73-643.000.
Lauria, Anthony T.; and Voisinet, Louis J., to Union Carbide Corporation. Electric arc furnace component. 4,453,253, Cl. 373-74.000.
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Vishnevsky, Valdimir S.; Kartashev, Igor A.; Lavrinenko, Vyacheslav V.; Boichenko, Oleg L.; Koval, Vitaly S.; Golovyashin, Jury V.; Serov, Nikolai F.; Shinkarenko, Leonid I.; and Jurash, Oleg G., 4,453,103, Cl. 310-323.000.
Laws, William R.; and Reed, Geoffrey R. Heat shield; and insulation panels therefor. 4,452,587, Cl. 432-245.000.
Leary, David J.; and Barnes, James O. Semiconductor gas sensor. 4,453,151, Cl. 338-34.000.
Leblanc, Jean; Rossignol, Francois; and Cigolotti, Jean Pierre, to Robert Bosch GmbH. Fuel injection pump. 4,452,574, Cl. 417-490.000.
Le Can, Claude J. P. F.; and Hart, Karel, to U.S. Philips Corporation. MOS Transistor type integrated circuit for the execution of logical operations on a plurality of data signals. 4,453,096, Cl. 307-448.000.
Lectret S.A.: *See*—
Murphy, Preston V., 4,453,044, Cl. 179-110.00A.
Lee, Jin P.; and Yi, Ching Sui A. Assay method and reagent kit means for lipid-containing body fluid. 4,452,903, Cl. 436-540.000.
Lee, Marlow, to H & H Tube & Mfg. Co. Heat transfer tube assembly. 4,451,966, Cl. 29-521.000.
Lee, Michael W.: *See*—
Davies, Richard A.; Lee, Michael W.; Rodenberger, Frank A.; Hill, James R.; Kulavich, David P.; and Sowell, Donald L., 4,452,660, Cl. 156-422.000.
Leemann, Beat T.; and Yourd, Roland B., to United States of America, Energy. Liquid-film electron stripper. 4,453,077, Cl. 250-423.00R.

Lefferts, Johannes; and Roelofs, Roelof, to Steg Siebtechnik GmbH. Apparatus for joining the ends of a belt to make it endless. 4,451,957, Cl. 24-573.000.

Legros, Raymond: *See*—
Robben, Paul J.; Legros, Raymond; and Rittersdorf, Udo, 4,451,958, Cl. 24-636.000.

Lehman, E. Dale: *See*—
Larson, Vivian M.; and Lehman, E. Dale, 4,452,734, Cl. 260-112.00R.

Lehmann, Karl G. Suitcase with band element for concealing butt joint between upper and lower parts thereof. 4,452,348, Cl. 190-122.000.

Lehmann, Klaus: *See*—
Markert, Gerhard; Dreher, Dieter; Lehmann, Klaus; Siol, Werner; and Rauch, Hubert, 4,452,862, Cl. 428-407.000.

Leibhard, Erich; Herb, Armin; Bergner, Arndt; and Lang, Gusztav, to Hilti Aktiengesellschaft. Device for filling boreholes. 4,452,285, Cl. 141-392.000.

Leigh, John S.: *See*—
Chance, Britton; Leigh, John S.; and Eleff, Scott M., 4,452,250, Cl. 128-653.000.

Leining, Lyndon R., to Geo. A. Hormel & Company. Hand held skinning device. 4,451,953, Cl. 17-21.000.

Leistiko, Lawrence F. Boat keel tool. 4,451,989, Cl. 33-286.000.

Leivenzon, Simon; and Leivenzon, Zvi, to Firmagroup Australia Pty. Ltd. Automatic door opener. 4,452,292, Cl. 160-133.000.

Leivenzon, Zvi: *See*—
Leivenzon, Simon; and Leivenzon, Zvi, 4,452,292, Cl. 160-133.000.

Lejeune, Alfred; and Dumoulin, Jean-Claude. Horizontal autoclave tank for the treatment of textile materials. 4,452,055, Cl. 68-189.000.

LeMarbe, Edward S., to Miner Enterprises, Inc. Gate assembly unit for hopper-type railroad car. 4,452,149, Cl. 105-250.000.

Lemelson, Jerome H. Switch activating system and method. 4,453,161, Cl. 340-825.310.

Lenox, Ronald S.; Schwartz, Anne L.; and Sparks, Moses, Jr., to Armstrong World Industries, Inc. Decorative sheets and coverings comprising polyvinyl chloride and cationic dyestuffs. 4,452,604, Cl. 8-471.000.

Leopoldi, Norbert; and Heinrich, William P., to Cloverline, Inc. Sanitary blood lancet device. 4,452,243, Cl. 128-314.000.

Lepley, Chelsea; and LaCroix, J. Scott, to Isotechnologies, Inc. Ankle exerciser. 4,452,447, Cl. 272-96.000.

Leppard, David G., to Ciba-Geigy AG. Color-photographic recording material. 4,452,884, Cl. 430-551.000.

Lester Laboratories, Inc.: *See*—
Friedman, Lester A.; Kwong, Cecil D.; and Faulkner, James D., 4,452,709, Cl. 252-8.900.

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Tai, Ho T.; Reed, David A.; Verhoef, Nicolaas J. F. D.; and Deutscher, Fritz, 4,452,717, Cl. 252-109.000.

Levine, Harold I.: *See*—
Cole, Bruce A.; Levine, Harold I.; McGuire, Michael T.; Nelson, Kathleen J.; and Slade, Louise, 4,452,824, Cl. 426-565.000.

Levine, Jules D.: *See*—
Jensen, Millard; and Levine, Jules D., 4,451,968, Cl. 29-572.000.

Levine, Walter E.; Heath, Allan B.; and Gossman, Richard C., to Acheson Industries, Inc. Spray apparatus for metal forming and glassware forming machines. 4,452,578, Cl. 239-463.000.

Levinson, Vladimir A.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,452,295, Cl. 164-186.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Agricultural ureas and isoureas. 4,452,627, Cl. 71-92.000.

Lew, Hyok S. Self-interlocking grille. 4,452,025, Cl. 52-668.000.

Lewis, David M.: *See*—
Johnson, Richard E.; Williams, Roger O.; Higgins, Ronald W.; and Lewis, David M., 4,453,188, Cl. 360-78.000.

Lewis, John, Jr.: *See*—
Wrenn, George E., Jr.; and Lewis, John, Jr., 4,452,832, Cl. 427-350.000.

Lewis, Tommy K. Self acupressure apparatus. 4,452,237, Cl. 128-60.000.

Lewis, Walter M., to Stereo Optical Company, Inc. Eye testing device. 4,452,515, Cl. 351-243.000.

Li, Allen S. U.: *See*—
Eccles, Richard M.; Li, Allen S. U.; Lin, Shyy-Jong D.; Malik, Virginia A.; and Chervenak, Michael C., 4,452,911, Cl. 502-100.000.

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Meeker, James A., 4,452,351, Cl. 198-434.000.

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Boden, Richard M.; and Licciardello, Michael, 4,452,730, Cl. 252-522.00R.

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Eberhardt, Kurt; Hoppner, Dietrich; and Rall, Bernhard, 4,453,038, Cl. 179-81.00B.
Schuster, Harald, 4,453,145, Cl. 333-174.000.

Liebig, Reinhard, to Siemens AG. Driving arrangement for electrical switches with an independent trip release mechanism. 4,453,056, Cl. 200-153.0SC.

Liggett, John V., to Rockwell International Corporation. Wire wheel simulated wheel cover. 4,452,493, Cl. 301-37.0SS.

Lijewski, Michael E.; and Zeisler, George, to Expert Automation, Inc. Twin cam index drive. 4,452,103, Cl. 74-817.000.

Lin, Chiu-Hong: *See*—
Johnson, Roy A.; Lin, Chiu-Hong; and Bundy, Gordon L., 4,452,986, Cl. 548-336.000.

Lin, Shyy-Jong D.: *See*—
Eccles, Richard M.; Li, Allen S. U.; Lin, Shyy-Jong D.; Malik, Virginia A.; and Chervenak, Michael C., 4,452,911, Cl. 502-100.000.

Lindsay, Ernest H., Jr.: *See*—
Nelson, John F.; Lindsay, Ernest H., Jr.; Zeller, Albert M.; and Peterson, Francis C., 4,452,556, Cl. 411-377.000.

Lindskoug, Stefan, to Mechanical Technology Incorporated. Piston rod seal. 4,452,042, Cl. 60-517.000.

Linick, James. Scanning mechanism for FLIR systems. 4,453,087, Cl. 250-334.000.

Linser, Charles M.: *See*—
Davis, Malcolm F.; Linser, Charles M.; and Resnick, Brian J., 4,453,221, Cl. 364-513.000.

Linton, Charles R.: *See*—
Frankeny, Richard F.; and Linton, Charles R., 4,453,194, Cl. 361-154.000.

Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K. Device for heating air by flue gases in steam boilers and furnaces. 4,452,181, Cl. 122-1.00A.

Lipinski, Christopher A.: *See*—
LaMattina, John L.; and Lipinski, Christopher A., 4,452,987, Cl. 548-343.000.

Lissalde, Francois-Claude; and Esteve, Jacques, to Cristec Industries. Method for measuring the charge state of an accumulator and a device for implementing such method. 4,453,129, Cl. 324-429.000.

List, Rainer; Schellmann, Klaus; and Schulze, Heinz, to Dr. Ing. h.c.F. Porsche AG. Valve control for internal combustion engines. 4,452,186, Cl. 123-90.160.

Litton Industrial Products, Inc.: *See*—
Shank, William E., 4,452,223, Cl. 125-11.00R.

Litton Systems, Inc.: *See*—
Baccei, James S. C., 4,451,975, Cl. 29-705.000.

Littrell, Denis G., to Rexnord Inc. Vertical media bed filter and method of cleaning filter panels. 4,452,613, Cl. 55-96.000.

Lloyd, Ronald; and Metcalfe, Peter J., to Smith and Nephew Associated Companies Limited. Moisture vapor transmitting film of polyurethane blended with an incompatible polymer. 4,452,845, Cl. 428-220.000.

Lo, Gerald J. P.; Cuhaci, Misel; and Hitchcock, N. S., to Canadian Patents and Development Limited. Spectrum shaping microwave digital modulators. 4,453,257, Cl. 375-60.000.

Locatell, Louis, Jr.; and Zepp, Charles M., to Polaroid Corporation. Quaternary nitrogen-containing polymers and articles including same. 4,452,878, Cl. 430-215.000.

Lochner, Kaspar. Hydraulic-operating shock and vibration absorber and damper. 4,452,437, Cl. 267-64.220.

Loews Theatres, Inc.: *See*—
Norman, Vello; and Ihrig, Arthur M., 4,452,259, Cl. 131-349.000.

Long, Thomas F., to Interco Incorporated. Safety shoe and method for making same. 4,451,949, Cl. 12-146.00C.

Lonnebring, Arne. Method and apparatus for mixing liquids. 4,452,265, Cl. 137-4.000.

Loo, Billy W., to United States of America, Energy. Grooved impactor and inertial trap for sampling inhalable particulate matter. 4,452,068, Cl. 73-28.000.

Lopez, Claudio: *See*—
Sarnoff, Stanley J.; Tarello, William R.; Lopez, Claudio; and Malooley, Rudolph S., 4,452,241, Cl. 128-204.180.

Lopez, Fernand. Reverse-osmosis apparatus for producing fresh water from seawater. 4,452,696, Cl. 210-170.000.

Lord Corporation: *See*—
Dawdy, Terrance H., 4,452,944, Cl. 525-126.000.

Lordo, Robert E., to Powertron Division of Contraves Goerz Corp. Permanent magnet DC motor with magnets recessed into motor frame. 4,453,097, Cl. 310-154.000.

Lorenz, Artur: *See*—
Drinkuth, Franz; von Bonin, Wulf; Schapel, Dietmar; and Lorenz, Artur, 4,452,905, Cl. 501-81.000.

Losel, Walter; Roos, Otto; Reichl, Richard; and Kuhn, Franz-Josef, to Boehringer Ingelheim KG. 1-Furyl-3,4-dihydro-isoquinolines. 4,452,789, Cl. 424-258.000.

Loskorn, Richard A., to Burroughs Corporation. Component selection system for a multiple line adapter organization. 4,453,228, Cl. 364-900.000.

Love, Ronald B., to J & P Coats, Limited. Continuous yarn dyeing: uniformly coating running yarn with dye liquid, drying and fixing with heat. 4,452,605, Cl. 8-494.000.

Lovell, Roger. Corrosion protection product, method and structure. 4,452,856, Cl. 428-312.800.

Lowrey, O. Preston, III. Active thermal storage using the ground underlying a solar pond. 4,452,227, Cl. 126-415.000.

Loyd, Ronald C.: *See*—
Johnson, Jack E.; Loyd, Ronald C.; and Fodness, William, 4,451,983, Cl. 30-276.000.

Lubben, Manfred; and Witt, Wolfram, to Rheinmetall GmbH. Method of coating ammunition with a protective surface layer. 4,452,653, Cl. 149-11.000.

Lucas Industries plc: *See*—
Francis, John H.; Vernon, John P.; and Moore, John H., 4,453,124, Cl. 323-347.000.

Lucking, Anthony J., to Waddington & Duval Limited. Plastic diaphragm tap. 4,452,425, Cl. 251-144.000.

Ludwig, George C., to AVM Corporation. Method of making a pressurized pneumatic counterbalance. 4,451,964, Cl. 29-437.000.

Ludwig, George C., to AVM Corporation. Apparatus for making a pneumatic counterbalance. 4,451,978, Cl. 29-776.000.

Lundquist, Lynn. Compensating core pin for plastic injection molds. 4,452,420, Cl. 249-175.000.

Lundy Electronics & Systems, Inc.: *See*—
Britt, Ronald H., 4,453,268, Cl. 382-50.000.

Lunn, Royston C.; MacAfee, J. Edwin; Grabowski, Robert C.; Renneker, Dennis N.; and Winkler, John M., to American Motors Corporation. Vehicle axle. 4,452,331, Cl. 180-247.000.

Lupinski, John H.: *See*—
Byrne, Martin A.; and Lupinski, John H., 4,452,938, Cl. 524-439.000.

Lurssen, Klaus; Holmwood, Graham; Kramer, Wolfgang; Regel, Erik; Reiser, Wolf; and Schroder, Rolf, to Bayer Aktiengesellschaft. Synergistic compositions for inhibiting plant growth. 4,452,625, Cl. 71-76.000.

Lutsky, Vasily I.: *See*—
Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.

Lynch Corporation: *See*—
Shields, Ronald, 4,452,350, Cl. 198-424.000.

M.A.N.-Roland: *See*—
Geschwindner, Herbert; and Abendroth, Paul, 4,452,442, Cl. 271-204.000.

M & W Gear Company: *See*—
Meiners, Elmo R., 4,452,320, Cl. 172-708.000.

M. W. Kellogg Company, The: *See*—
Peterson, Robert B.; Finello, Ralph; and Denavit, George A., 4,452,760, Cl. 422-148.000.

MacAfee, J. Edwin: *See*—
Lunn, Royston C.; MacAfee, J. Edwin; Grabowski, Robert C.; Renneker, Dennis N.; and Winkler, John M., 4,452,331, Cl. 180-247.000.

Machinefabriek G.J. Nijhuis B.V.: *See*—
Nijhuis, Gerrit J., 4,452,178, Cl. 119-20.000.

Machonis, John, Jr.: *See*—
Shida, Mitsuzo; Zeitlin, Robert; Machonis, John, Jr.; and Adur, Ashok M., 4,452,942, Cl. 525-74.000.

Macquet, Jean-Pierre, to Sanofi. Organic complex of platinum, its preparation and its use for treating malignant tumors. 4,452,812, Cl. 424-287.000.

Madley, Jack R.: *See*—
Jackson, Douglas H.; Madley, Jack R.; and Lathwell, Dennis C., 4,452,680, Cl. 204-181.00R.

Maeda, Yukio: *See*—
Inoue, Takao; Maeda, Yukio; and Uchida, Masami, 4,452,819, Cl. 427-54.100.

Maekawa, Shinichi: *See*—
Kawasaki, Yuichi; Tanaka, Sumio; Iwahashi, Hiroshi; Asano, Masamichi; Maekawa, Shinichi; and Mito, Masazi, 4,453,174, Cl. 357-41.000.

Magdo, Ingrid E.: *See*—
Chu, Wei-Kan; Magdo, Ingrid E.; and Rupprecht, Hans S., 4,452,645, Cl. 148-1.500.

Mager, Herbert: *See*—
Konrad, Eugen; Husemeyer, Hans; and Mager, Herbert, 4,452,603, Cl. 8-405.000.

Maier, Bruce R.; and Risch, Jon M., to International Jensen Incorporated. Record handling device. 4,452,480, Cl. 294-104.000.

Maier, Jakob: *See*—
Hoefelmayr, Tilman; and Maier, Jakob, 4,452,176, Cl. 119-14.170.

Maine, Reuben E., to Sperry Corporation. Differential Doppler receiver. 4,453,165, Cl. 343-418.000.

Majors, Curtis O., to Rosemont Industries, Inc. Reversing weight for vibrating finishing machines. 4,452,016, Cl. 51-163.200.

Maki, Nagatoshi. Shotgun cartridge and wad thereof. 4,452,144, Cl. 102-453.000.

Malak, Stephen P., to Spring - Mornne, Inc. Method and apparatus for positioning a shaft aligning sensing structure on a shaft. 4,451,992, Cl. 33-412.000.

Malem, Hilal. Medical nebulizing apparatus. 4,452,239, Cl. 128-200.170.

Malette, William G.; and Quigley, Herbert J., Jr. Method for the therapeutic occulsion of blood vessels. 4,452,785, Cl. 424-180.000.

Malik, Virginia A.: *See*—
Eccles, Richard M.; Li, Allen S. U.; Lin, Shyy-Jong D.; Malik, Virginia A.; and Chervenak, Michael C., 4,452,911, Cl. 502-100.000.

Malnati, Paul R.: *See*—
Askinazi, Martin; McManus, Liam; Malnati, Paul R.; and Kapeghian, Charles L., 4,453,211, Cl. 364-200.000.

Malooley, Rudolph S.: *See*—
Sarnoff, Stanley J.; Tarello, William R.; Lopez, Claudio; and Malooley, Rudolph S., 4,452,241, Cl. 128-204.180.

Mancin, Rita L. Wall mounted bottle rack. 4,452,362, Cl. 211-75.000.

Mannesmann Aktiengesellschaft: *See*—
Ehlert, Klaus-Peter; and Zebrowski, Dietmar, 4,452,432, Cl. 266-50.000.
Rahmfeld, Werner, 4,452,298, Cl. 164-485.000.

Manns, Walter J. Container for pipes. 4,452,258, Cl. 131-329.000.

Mansfield, Graham J.: *See*—
Davies, John; Mansfield, Graham J.; Tutt, Kingsley J.; and Graveling, Frederick J., 4,452,057, Cl. 69-6.500.

Marcinkowski, Jurgen: *See*—
Wendler, Manfred; Marcinkowski, Jurgen; and Brehm, Jurgen, 4,452,661, Cl. 156-428.000.

Marcus, Stanley A., to Dow Chemical Company, The. Manufacture of draw-redraw cans using steel sheet material film laminated or extrusion coated with a high density polyethylene graft copolymer. 4,452,375, Cl. 220-458.000.

Markert, Gerhard; Dreher, Dieter; Lehmann, Klaus; Siol, Werner; and Rauch, Hubert, to Rohm GmbH Chemische Fabrik. Pharmaceutical coating materials soluble or swellable in gastric juice and pharmaceutical dosage forms coated therewith. 4,452,862, Cl. 428-407.000.

Marks, Robert E.; Burton, James S.; Elvidge, John A.; and Shah, Saresh. Derivatives of substituted phenylacetic acids and compositions containing them. 4,452,783, Cl. 424-177.000.

Markus Hermetische Deuren B.V.: *See*—
Markus, Jan J. G., 4,452,014, Cl. 49-360.000.

Markus, Jan J. G., to Markus Hermetische Deuren B.V. Device for operating a sliding door. 4,452,014, Cl. 49-360.000.

Marneffe, Antonius C.: *See*—
Bouwknegt, Jan; Dieleman, Louis F. A.; and Marneffe, Antonius C., 4,452,557, Cl. 414-118.000.

Marriere, Jean-Pierre: *See*—
Beugin, Michel; and Marriere, Jean-Pierre, 4,453,244, Cl. 369-225.000.

Marrion, Alistair R.; Roy, Susan; and Rowe, Frank E., to International Paint Company Limited, The. Coating composition comprising a hydroxy component, an anhydride component and a catalyst. 4,452,948, Cl. 525-207.000.

Marsh, Charles R., to Auto-Masters Ltd. Apparatus for cutting printing plates. 4,452,598, Cl. 493-354.000.

Martin, Larry D.; and Bradley, Gary W., to Halliburton Company. Method of removing copper and copper oxide from a ferrous metal surface. 4,452,643, Cl. 134-3.000.

Martin, Lynn W. Horizontal axis rotatory frustum flying toy. 4,452,007, Cl. 446-74.00R.

Martin Marietta Corporation: *See*—
Beblavi, James C.; and Williams, Laurence O., 4,452,423, Cl. 251-65.000.

Martin, Peter: *See*—
Grollimund, Everett C.; and Martin, Peter, 4,452,532, Cl. 356-121.000.

Martner, John G., to Exxon Research and Engineering Co. Ink jet apparatus and method. 4,453,169, Cl. 346-140.0PD.

Martorana, Piero A.: *See*—
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,452,797, Cl. 424-250.000.

Marttinen, Toivo O. Carrying device for pot plant cell units. 4,452,383, Cl. 224-208.000.

Martynov, Appolinary K.: *See*—
Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.

Marubeni Construction Machinery Sales, Inc.: *See*—
Matsuda, Shinichi, 4,452,169, Cl. 118-50.000.

Maruo, Kiyoshi: *See*—
Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, 4,452,160, Cl. 112-410.000.

Maruta, Fumio: *See*—
Kitahra, Yoshimi; Fukuda, Kazumasa; and Maruta, Fumio, 4,452,864, Cl. 428-611.000.

Maruyama, Hiromi: *See*—
Takemoto, Kenji; Miyasaka, Yumiko; Ishitsuka, Hideo; Suhara, Yasuji; and Maruyama, Hiromi, 4,452,782, Cl. 424-177.000.

Maruyama, Yoichiro: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.

Marx, Matthias; and Straehle, Wolfgang, to BASF Aktiengesellschaft. Process for the preparation of polyester polyols and/or polyesterpolyether polyols. 4,452,997, Cl. 560-200.000.

Marx, Matthias: *See*—
Horacek, Heinrich; Gehm, Robert; Frank, Wolfram; and Marx, Matthias, 4,452,921, Cl. 521-118.000.

Masaru, Fujimura: *See*—
Ikuo, Yamaguchi; Yasuo, Higashibata; Masaru, Fujimura; Toshio, Nagashima; and Shunsuke, Sugano, 4,452,019, Cl. 52-167.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Teetz, Wolfgang; Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, 4,452,156, Cl. 112-97.000.

Maschinenfabrik Hennecke GmbH: *See*—
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,452,917, Cl. 521-50.000.

Maslennikov, Konstantin N.: *See*—
Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.

Massachusetts Institute of Technology: *See*—
Jones, Alun G.; Davison, Alan; and Abrams, Michael J., 4,452,774, Cl. 424-1.100.
Wurtman, Richard J.; and Wurtman, Judith, 4,452,815, Cl. 424-330.000.

Mather, Pamela K.: *See*—
Kelley, Timothy A.; and Mather, Pamela K., 4,452,129, Cl. 98-2.180.

Mathews, Douglas C.; and Peracchio, Aldo A., to United Technologies Corporation. Sound absorbing structure for a gas turbine engine. 4,452,335, Cl. 181-214.000.

Mathieu, Julien C., to Dayco Corporation. Cushioned center plate structure for a railway vehicle body and method of making same. 4,452,148, Cl. 105-199.00C.

Mathieu, Julien C., to Dayco Corporation. Brake system for railway vehicle. 4,452,345, Cl. 188-207.000.

Matlin, Ronald W.; Millner, Alan R.; and Sarles, Frederick W., to TriSolar Corp. Smoothing electrical energy output with mechanical accumulator. 4,452,045, Cl. 60-641.800.

Matsubara, Noboru: *See*—
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,452,187, Cl. 123-90.160.

Matsubara, Yuji, to Nissan Motor Company, Limited. Spark timing control device for an internal combustion engine. 4,452,204, Cl. 123-417.000.

Matsuda, Eugene: *See*—
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,452,421, Cl. 251-1.00B.

Matsuda, Masaoki: *See*—
Tahara, Susumu; Fujii, Kozo; Nishihira, Keig; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,453,026, Cl. 568-864.000.

Matsuda, Minoru: *See*—
Nishijima, Masayuki; Koizumi, Morimasa; and Matsuda, Minoru, 4,452,859, Cl. 428-340.000.

Matsuda, Shinich: *See*—
Matsuda, Shinichi, 4,452,169, Cl. 118-50.000.

Matsuda, Shinichi, to Matsuda, Shinich; and Marubeni Construction Machinery Sales, Inc. Reviving apparatus for fluid passages. 4,452,169, Cl. 118-50.000.

Matsumoto, Hiroshi: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,452,981, Cl. 544-236.000.

Matsumoto, Kuniyoshi; and Ishimatsu, Katsuya, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Lubricating system for outboard motors. 4,452,195, Cl. 123-195.0AC.

Matsumoto, Masao: *See*—
Shirakawa, Kenzo; Yamada, Norio; Kitamura, Masami; Yasunaka, Shinsaku; and Matsumoto, Masao, 4,451,980, Cl. 30-41.000.

Matsuno, Akira: *See*—
Kohyama, Katsuhisa; Matsuno, Akira; Kidera, Teruo; and Tsuruhara, Kenji, 4,452,976, Cl. 528-491.000.

Matsuo, Shigeru; and Itoi, Masaaki, to Idemitsu Kosan Company Limited. Process for the production of polycarbonate. 4,452,966, Cl. 528-174.000.

Matsushima, Noriaki; Saeki, Yukio; and Kirabayashi, Hajime, to Sumitomo Durez Company, Ltd. Resin-coated sand composition and method for producing same. 4,452,926, Cl. 523-145.000.

Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, to Sumitomo Durez Company, Ltd. Resin coated sand for shell molding process. 4,452,927, Cl. 523-147.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,451,976, Cl. 29-740.000.
Inoue, Takao; Maeda, Yukio; and Uchida, Masami, 4,452,819, Cl. 427-54.100.
Miyatake, Yoshito; Nagaoka, Yoshitomi; and Nakajima, Yasuo, 4,453,178, Cl. 358-60.000.
Mori, Fumiko, 4,453,066, Cl. 219-10.55M.
Tamura, Toshiaki; Otani, Yoshiaki; Otake, Hiroshi; and Yamamura, Masami, 4,453,144, Cl. 333-140.000.

Matsushita Electric Works, Ltd.: *See*—
Hirano, Yoshio; Tokunaga, Noriyuki; Murabayashi, Hidekazu; and Urayama, Takumi, 4,451,942, Cl. 4-420.200.
Sauer, Hans; Nishikawa, Toyotaka; and Oberndorfer, Johannes, 4,453,195, Cl. 361-156.000.
Shirakawa, Kenzo; Yamada, Norio; Kitamura, Masami; Yasunaka, Shinsaku; and Matsumoto, Masao, 4,451,980, Cl. 30-41.000.

Matsushita Electronics Corporation: *See*—
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

Matsuura, Masahiko: *See*—
Tsutsumi, Kazumichi; and Matsuura, Masahiko, 4,452,200, Cl. 123-339.000.

Matsuura, Masatoshi. Animal trap. 4,452,004, Cl. 43-61.000.

Matsuyama, Youji, to Honda Giken Kogyo Kabushiki Kaisha. Electrical apparatus in motorized two-wheeled vehicle. 4,452,330, Cl. 180-219.000.

Mattfeld, Johann; and Maute, Hans-Jurgen. Amplifier circuit arrangement having two amplifiers with respectively different electrical properties. 4,453,135, Cl. 330-295.000.

Matthews, James R.; and May, Glen A., to Canada, Her Majesty the Queen in Right of, as Represented by the Minister of National Defence. Apparatus useful in repair of a terminator. 4,451,977, Cl. 29-748.000.

Mattia, James A.: *See*—
Schoenleber, Donald; and Mattia, James A., 4,452,399, Cl. 229-72.000.

Mattia, Manlio M., to Cubemco, Inc. Separation and purification of gases and vapors by continuous pressure-swing adsorption. 4,452,612, Cl. 55-25.000.

Mattsson, Soren; Holmer, Nils-Gunnar; Bernstein, Kurt; Ulmsten, Ulf; Astedt, Birger; and Jacobsson, Lars. Method for localizing a region in the human body, in particular venous thrombi, by the uptake of a radioactive substance, particularly ^{125}I-fibrinogen. 4,453,075, Cl. 250-363.00S.

Matushiro, Ryuichi: *See*—
Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.

Maurer, Helmut: *See*—
Latsch, Reinhard; and Maurer, Helmut, 4,452,189, Cl. 123-143.00B.

Maurer, Herman J.: *See*—
Coyle, Edward L.; Maurer, Herman J.; and Cochran, Gary L., 4,452,560, Cl. 414-723.000.

Maurer, Werner; Zimmer, Johann; and Haus, Artur, to Bayer Aktiengesellschaft. Formaldehyde condensates and their preparation. 4,453,002, Cl. 562-429.000.

Mauries, Reinhard: *See*—
Rohner, Joachim; Zumfeld, Heinz; Mauries, Reinhard; and Preuhs, Hans-Jurgen, 4,452,035, Cl. 57-22.000.

Maute, Hans-Jurgen: *See*—
Mattfeld, Johann; and Maute, Hans-Jurgen, 4,453,135, Cl. 330-295.000.

Max-Planck Gesellschaft zur Forderung der Wissenschaften: *See*—
Wissler, Josef H., 4,452,735, Cl. 260-112.00B.

Maxwell, Donald R., to Warner-Lambert Company. 1-Substituted phenyl-4-alkyl hydantoin piperazine compounds as antihypertensive agents. 4,452,798, Cl. 424-250.000.

Maxwell, Jerrold F.: *See*—
Wilson, Joe C.; Hirozawa, Stanley T.; Eisenstein, Stephen E.; and Maxwell, Jerrold F., 4,452,758, Cl. 422-15.000.

May, Glen A.: *See*—
Matthews, James R.; and May, Glen A., 4,451,977, Cl. 29-748.000.

Maynard, Pamela M.: *See*—
Elms, Robert T.; Maynard, Pamela M.; and Mueller, Denis A., 4,453,117, Cl. 318-778.000.

Mazur, Richard J.; Tomczak, Lawrence W.; Momin, Salim A.; and Killen, Howard R., to Chrysler Corporation. Automatic idle speed actuator valve. 4,452,201, Cl. 123-339.000.

McCain, James H.; and Theiling, Louis F., Jr., to Union Carbide Corporation. Process for preparing nonionic surfactants-oxyalkylation with calcium and/or strontium catalysts. 4,453,022, Cl. 568-618.000.

McCain, James H.; and Theiling, Louis F., Jr., to Union Carbide Corporation. Process for preparing nonionic surfactants-oxyalkylation with promoted barium catalysts. 4,453,023, Cl. 568-618.000.

McCarthy, James R. Bituminous coal reagent and flotation process. 4,452,714, Cl. 252-61.000.

McClure, Delmar H., to McClure Plastics Company Incorporated. Cart washing and sanitizing apparatus. 4,452,263, Cl. 134-45.000.

McClure Plastics Company Incorporated: *See*—
McClure, Delmar H., 4,452,263, Cl. 134-45.000.

McColl, James R.: *See*—
Peters, Thomas E.; and McColl, James R., 4,453,179, Cl. 358-72.000.

McCoy, Donald G. Hook for attaching rider to board sailer. 4,452,161, Cl. 114-39.000.

McCready, Russell J., to General Electric Company. Stabilized polyester-polycarbonate blends and stabilization process therefor. 4,452,933, Cl. 524-217.000.

McCready, Russell J., to General Electric Company. Poly(alkylene dicarboxylate) process and catalysts for use therein. 4,452,969, Cl. 528-279.000.

McCullough, Thomas W.; and Stevens, Bradley D., to Dow Chemical Company, The. Styrena polymer foam made with α-polyolefin additives. 4,452,751, Cl. 264-45.500.

McDonnell Douglas Corporation: *See*—
Harbaugh, Donal E., 4,452,162, Cl. 114-74.00A.
Kelly, Patrick J.; and Hackett, Robert D., 4,452,395, Cl. 239-265.150.
Zuleeg, Rainer R., 4,452,646, Cl. 148-1.500.

McElyea, Ralph W. Hose guiding assembly. 4,452,386, Cl. 226-197.000.

McFarland, William W. Calculating apparatus and method. 4,452,080, Cl. 73-588.000.

McGann, Leo E.; and Adams, Kenneth D., to Singer Company, The. Reinforcing for molded sewing machine frame. 4,452,159, Cl. 112-258.000.

McGarrigle, Richard G.: *See*—
Sachs, Frederick; and McGarrigle, Richard G., 4,452,249, Cl. 128-642.000.

McGraw-Edison Company: *See*—
Burrage, Lawrence M., 4,453,197, Cl. 361-272.000.

McGuire, Michael T.: *See*—
Cole, Bruce A.; Levine, Harold I.; McGuire, Michael T.; Nelson, Kathleen J.; and Slade, Louise, 4,452,824, Cl. 426-565.000.

McLeod, Keith C., to Imperial Clevite Inc. Method for producing a machinable, high strength hot formed powdered ferrous base metal alloy. 4,452,756, Cl. 419-29.000.

McMahan, Michael E., to Halliburton Company. Circulation valve. 4,452,313, Cl. 166-373.000.

McManus, Liam: *See—*
Askinazi, Martin; McManus, Liam; Malnati, Paul R.; and Kapeghian, Charles L., 4,453,211, Cl. 364-200.000.

McMurtry, David R., to Rolls Royce Ltd.; and Renishaw Electrical Ltd. Probe for use in measuring apparatus. 4,451,988, Cl. 33-174.00L.

McNaney, Joseph T. Message character image projection control means. 4,453,160, Cl. 340-815.270.

Mead Johnson & Company: *See—*
Temple, Davis L., Jr.; and Yevich, Joseph P., 4,452,799, Cl. 424-250.000.

Mead, Richard: *See—*
Dob, Allan M.; Mead, Richard; and Wilson, Terry L., 4,453,152, Cl. 338-197.000.

Mechanical Technology Incorporated: *See—*
Lindskoug, Stefan, 4,452,042, Cl. 60-517.000.

Medical College of Wisconsin, Inc.: *See—*
Froncisz, Wojciech; and Hyde, James S., 4,453,147, Cl. 333-219.000.

Medicor Muvek: *See—*
Csekes, Jozsef, 4,452,445, Cl. 272-73.000.

Medrad, Inc.: *See—*
Heilman, Marlin S., 4,452,251, Cl. 128-655.000.

Meeker, James A., to Libbey-Owens-Ford Company. Sheet handling apparatus. 4,452,351, Cl. 198-434.000.

Meiners, Elmo R., to M & W Gear Company. Adjustable Danish tine. 4,452,320, Cl. 172-708.000.

Melnikov, Alexandr V.: *See—*
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,452,295, Cl. 164-186.000.

Meltzer, David, to International Business Machines Corporation. System for optimizing performance of paging store. 4,453,209, Cl. 364-200.000.

Mendelsohn, Alfred: *See—*
Handwerk, Richard H.; Mendelsohn, Alfred; and Haapala, Urho S., 4,452,750, Cl. 264-40.300.

Menor, George: *See—*
Heinz, Lothar; Menor, George; and Jahsman, Hendrick, 4,451,945, Cl. 5-63.000.

Menzi, Ernst, to Ernst Menzi AG. Apparatus for cutting tree parts. 4,452,286, Cl. 144-34.00E.

Meppen, Craig E.: *See—*
Ahlstrom, Ross C., Jr.; and Meppen, Craig E., 4,452,067, Cl. 73-23.100.

Merck & Co., Inc.: *See—*
Larson, Vivian M.; and Lehman, E. Dale, 4,452,734, Cl. 260-112.00R.

Merck Frosst Canada, Inc.: *See—*
Belanger, Patrice C.; Dufresne, Claude; Gillard, John W.; and Williams, Haydn W. R., 4,453,005, Cl. 562-492.000.

Merlini, Luigi; Bassi, Aldo; and Satta, Giuseppe, to Alfa Romeo Auto S.p.A. Modular multi-cylinder internal combustion engine with supercharging. 4,452,208, Cl. 123-481.000.

Merlino, Paul J.; and Reilly, Kevin J., to Westinghouse Electric Corp. Regenerative brake control for transit vehicle. 4,453,113, Cl. 318-376.000.

Merriam, Jay S.; and Hogg, Cecil B., to United Catalysts, Inc. Catalyst and process for carbon monoxide conversion in sour gas. 4,452,854, Cl. 423-437.000.

Messe, Gerard; Faure, Michel; and Ducombs, Marcel, to Alsthom-Atlantique. Electric shunt induction winding and automatic lamination cutting machine therefore. 4,453,150, Cl. 336-234.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Stephan, Michael; and Schwarz, Alois, 4,452,569, Cl. 416-134.00A.

Metako Kigyo Co., Ltd.: *See—*
Fukuchi, Shigeki, 4,452,294, Cl. 160-395.000.

Metcalfe, Peter J.: *See—*
Lloyd, Ronald; and Metcalfe, Peter J., 4,452,845, Cl. 428-220.000.

Methane Drainage Ventures: *See—*
Richards, Walter L., 4,452,489, Cl. 299-2.000.

Meyer, Manfred: *See—*
Geurtsen, Friedrich H. H.; Kebbel, Waldemar S.; and Meyer, Manfred, 4,452,659, Cl. 156-361.000.

Meyer, Paul M., to ACF Industries, Inc. Vacuum pressure transducer. 4,452,202, Cl. 123-494.000.

Meyer, Richard C. Solar air temperature control system for houses and other buildings. 4,452,228, Cl. 126-428.000.

Meyer, Walter: *See—*
Kreisel, Rudolf; and Meyer, Walter, 4,452,264, Cl. 134-58.00R.

Meyers, Bernard L.: *See—*
Hopkins, P. Donald; Meyers, Bernard L.; and Van Duch, Donna M., 4,452,910, Cl. 502-84.000.

Michael Horauf Maschinenfabrik: *See—*
Clauss, Gerhard; and Muller, Berthold, 4,452,596, Cl. 493-107.000.

Microlife Genetics: *See—*
Gonzalez, Carlos F., 4,452,895, Cl. 435-253.000.

Microlife Genetics, Inc.: *See—*
Olsen, Ronald H.; and Vandenbergh, Peter A., 4,452,894, Cl. 435-253.000.

Middleton, Charles F., Jr.; and Guidi, Arthur J., to Creative Fastening Methods, Inc. Welding method and apparatus suitable for forming links in jewelry. 4,453,072, Cl. 219-86.230.

Middleton, Michael C.; and Hernandez, Thomas J., to Honeywell Information Systems Inc. Apparatus for controlling the time sequenced energization of a memory unit. 4,453,208, Cl. 364-140.000.

Midland-Ross Corporation: *See—*
Deneau, Kenneth S., 4,452,153, Cl. 110-247.000.

Mifune, Hiroyuki: *See—*
Akimura, Yoshitaka; Okutsu, Eiichi; Moriuchi, Shigenori; Saeki, Naomi; Hashimura, Taiji; and Mifune, Hiroyuki, 4,452,882, Cl. 430-441.000.

Miguet, Paul S.; and Miguet, Simon H. Disk harrow with individually spring-mounted disks. 4,452,319, Cl. 172-573.000.

Miguet, Simon H.: *See—*
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Miles, Ronald O.; Giallorenzi, Thomas G.; and Tveten, Alan B., to United States of America, Navy. External cavity diode laser sensor. 4,452,533, Cl. 356-352.000.

Milgram, Alvin, to Fairchild Camera and Instrument Corporation. Lift-off wafer processing. 4,451,971, Cl. 29-578.000.

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Reeve, Michael H.; Millar, Colin A.; and Payne, David B., 4,452,506, Cl. 350-96.200.

Miller, Arthur J.; and Kostors, Charles H., to Elliott Turbomachinery Company, Inc. Methods for securing a rotor blade within a rotor assembly and removing a rotor blade therefrom. 4,451,959, Cl. 29-156.80R.

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Sperinde, Johnie M.; Goldring, Stanley D.; and Miller, Dean T., 4,453,218, Cl. 364-416.000.

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Miller, Michael J.; Scheithauer, Richard A.; Vanderpool, Clarence D.; and Husted, Eric F., to GTE Products Corporation. Method for producing cobalt metal powder. 4,452,633, Cl. 75-0.50A.

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Matlin, Ronald W.; Millner, Alan R.; and Sarles, Frederick W., 4,452,045, Cl. 60-641.800.

Millray, Robert: *See—*
Irwin, Lawrence F.; and Millray, Robert, 4,452,108, Cl. 81-129.000.

Miner Enterprises, Inc.: *See—*
LeMarbe, Edward S., 4,452,149, Cl. 105-250.000.

Minner, Willy, to Telefunken Electronic GmbH. Electronically controlled ignition system. 4,452,220, Cl. 123-644.000.

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Boeder, Charles W., 4,452,955, Cl. 525-518.000.
Frenchik, Robert A.; and Hoff, Kristen A., 4,452,883, Cl. 430-502.000.
Huffman, William A., 4,452,511, Cl. 350-346.000.

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Tabuchi, Kenji; and Oka, Tateki, 4,452,173, Cl. 118-652.000.

Minter, Marvin J., to Federal-Mogul Corporation. Rolling contact fatigue test assembly. 4,452,065, Cl. 73-7.000.

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Misumida, Yoshiro, to Tofle Kabushiki Kaisha. Casserole set. 4,452,224, Cl. 126-41.00R.

Mita Industrial Co., Ltd.: *See—*
Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakato, Hiromi, 4,452,530, Cl. 355-75.000.

Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, to Mitsui Toatsu Chemicals, Inc. Production process of DL-cystein. 4,453,008, Cl. 562-557.000.

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Kawasaki, Yuichi; Tanaka, Sumio; Iwahashi, Hiroshi; Asano, Masamichi; Maekawa, Shinichi; and Mito, Masazi, 4,453,174, Cl. 357-41.000.

Mitrofanov, Evgeny S.: *See—*
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Mitsubishi Chemical Industries Limited: *See—*
Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.
Kohyama, Katsuhisa; Matsuno, Akira; Kidera, Teruo; and Tsuruhara, Kenji, 4,452,976, Cl. 528-491.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujisaki, Shuji; and Chu, Itsuo, 4,452,570, Cl. 417-286.000.
Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, 4,452,571, Cl. 417-286.000.
Oizumi, Toshiro; Ito, Tetsuro; and Yamada, Shigeo, 4,453,071, Cl. 219-69.00G.
Sekii, Tsugio; and Jinbo, Kensaku, 4,452,073, Cl. 73-117.000.
Tanahashi, Toru, 4,452,341, Cl. 187-29.00R.
Tsutsumi, Kazumichi; and Matsuura, Masahiko, 4,452,200, Cl. 123-339.000.
Wada, Shunichi, 4,452,089, Cl. 73-861.230.

Wataya, Seiji, 4,452,211, Cl. 123-492.000.
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; and Yoshiyasu, Hajimu, 4,453,053, Cl. 200-144.00R.
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Irie, Nobuhiko, 4,452,577, Cl. 425-38.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Yoshizumi, Motohiko, 4,452,830, Cl. 427-215.000.
Mitsubishi Monsanto Chemical Company: *See*—
Sato, Takashi; and Ishikawa, Masahisa, 4,452,840, Cl. 428-156.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,452,941, Cl. 525-66.000.
Mitsuhashi, Hiroshi; Mizuno, Den-ichi; Hayashi, Koji; Abe, Shigeru; Takase, Muneaki; and Narita, Toshiharu, to Zenyaku Kogyo Kabushiki Kaisha. Condurango glycoside compounds, processes for their preparation, antitumor agents comprising them and compositions. 4,452,786, Cl. 424-182.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Sugimoto, Kenichi; and Tanabe, Yoshimitsu, 4,453,009, Cl. 568-316.000.
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Miwa, Hirohide, to Fujitsu Limited. Ultrasonic measuring method. 4,452,082, Cl. 73-599.000.
Miwa, Kiyoshi: *See*—
Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, 4,452,890, Cl. 435-115.000.
Miyabe, Toshinori: *See*—
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Miyakawa, Masashi: *See*—
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Miyasaka, Yumiko: *See*—
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Miyata, Muneyoshi, to Mitsuku Denshi Kogyo Kabushiki Kaisha. Leaf switch cover. 4,453,058, Cl. 200-283.000.
Miyatake, Yoshito; Nagaoka, Yoshitomi; and Nakajima, Yasuo, to Matsushita Electric Industrial Co., Ltd. Projection television apparatus. 4,453,178, Cl. 358-60.000.
Miyauchigo, Takashi: *See*—
Terai, Akio; Miyauchigo, Takashi; and Ota, Hiroshi, 4,452,479, Cl. 294-88.000.
Mizoguchi, Tetsuya; Sato, Fumitaka; and Furukatsu, Tadanobu, to Tokyo Shibaura Electric Co., Ltd.; and Nippon Electric Co., Ltd. Address conversion system. 4,453,230, Cl. 364-900.000.
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Mizusawa Industrial Chemicals Ltd.: *See*—
Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Sugawara, Masaaki, 4,452,635, Cl. 106-74.000.
Mizutare, Katsuhiko: *See*—
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Mobay Chemical Corporation: *See*—
Radovich, David A., 4,452,924, Cl. 521-174.000.
Mobil Oil Corporation: *See*—
Chester, Arthur W.; Murray: James G.; and Schwartz, Albert B., 4,452,958, Cl. 526-130.000.
Chu, Pochen; and Kuehl, Guenter H., 4,452,769, Cl. 423-329.000.
Dessau, Ralph M., 4,453,029, Cl. 585-828.000.
Fowles, Patrick E.; and Yan, Tsoung Y., 4,452,621, Cl. 62-534.000.
Jones, John P., Jr., 4,451,986, Cl. 33-126.500.
Polomski, Robert E., 4,452,691, Cl. 208-86.000.
Shih, Stuart S., 4,452,690, Cl. 208-46.000.
Yan, Taoung-Yuan, 4,452,490, Cl. 299-4.000.
Mobil Solar Energy Corporation: *See*—
Chaudhuri, Arup R., 4,451,969, Cl. 29-572.000.
Modco Industries, Incorporation: *See*—
Robbins, Gary B., 4,452,372, Cl. 220-316.000.
Modern Refractories Service Corp.: *See*—
Kolvek, Robert E.; Bronke, Henry R.; Foit, Nicholas W., Jr.; and Kish, Robert J., 4,452,749, Cl. 264-30.000.
Mohri, Katsuo: *See*—
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Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., to Union Carbide Corporation. Discrete spiral flow imparting device. 4,452,956, Cl. 526-64.000.
Molday, Robert S., to Canadian Patents and Development Limited. Magnetic iron-dextran microspheres. 4,452,773, Cl. 424-1.100.
Molins Limited: *See*—
Dyett, Derek H.; Troll, Dennis G.; and Horsley, John K., 4,452,172, Cl. 118-203.000.
Molitor Industries, Inc.: *See*—
Molitor, Victor D., 4,451,960, Cl. 29-157.30R.
Molitor, Victor D., to Molitor Industries, Inc. Method of producing multiple coil, multiple tube heat exchanger. 4,451,960, Cl. 29-157.30R.
Momin, Salim A.: *See*—
Mazur, Richard J.; Tomczak, Lawrence W.; Momin, Salim A.; and Killen, Howard R., 4,452,201, Cl. 123-339.000.
Momiyama, Kikuo: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, 4,452,522, Cl. 354-289.120.
Monarch Marking Systems, Inc.: *See*—
Mistyurik, John D., 4,452,141, Cl. 101-348.000.
Money, David K.; and Daly, Christopher N., to Telectronics Pty. Ltd. Efficient and fast-switching telemetry transmitter. 4,453,162, Cl. 340-870.390.
Monhardt, Richard J.; Orr, Alfred B.; Premont, Emile J.; and Wright, Joseph B., to United Technologies Corporation. Containment structure. 4,452,565, Cl. 415-9.000.
Monoflo International, Inc.: *See*—
Rader, Helmut, 4,452,179, Cl. 119-81.000.
Monsanto Company: *See*—
Vaidyanathan, Kumbakonam R., 4,453,027, Cl. 568-937.000.
Montedison S.p.A.: *See*—
Dal Moro, Anacleto; and Pinamonti, Franco, 4,452,630, Cl. 71-111.000.
Montgomery, David B.: *See*—
Dunn, Terry S.; Montgomery, David B.; and Williams, Joel L., 4,452,679, Cl. 204-164.000.
Moore, George R., to General Motors Corporation. Multiplex system for steering wheel mounted switches. 4,453,088, Cl. 307-10.00R.
Moore, John H.: *See*—
Francis, John H.; Vernon, John P.; and Moore, John H., 4,453,124, Cl. 323-347.000.
Moore, John T.: *See*—
Morenus, Richard C.; and Moore, John T., 4,452,124, Cl. 89-1.816.
Moore, Robert G., Jr., to Bendix Corporation, The. Fuel/air ratio control apparatus for a reciprocating aircraft engine. 4,452,207, Cl. 123-440.000.
Moos, Niklaus J., to Versatile Corporation. Trip mechanism. 4,452,317, Cl. 172-266.000.
Morehead, Peter B.: *See*—
Stephens, Barry D.; and Morehead, Peter B., 4,452,431, Cl. 256-13.100.
Morenus, Richard C.; and Moore, John T., to Ford Aerospace & Communications Corporation. Stabilizing tab for missile launcher. 4,452,124, Cl. 89-1.816.
Moretti, Anthony L., to E. D. Bullard Company. Respiratory protection apparatus. 4,452,240, Cl. 128-201.180.
Mori, Fumiko, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for thawing by high frequency heating. 4,453,066, Cl. 219-10.55M.
Moriarity, Thomas C., to PPG Industries, Inc. Method of electrodeposition of coating compositions containing novel urethane curing agents. 4,452,681, Cl. 204-181.00R.
Moriarity, Thomas C., to PPG Industries, Inc. Curable compositions containing novel urethane curing agents. 4,452,930, Cl. 523-418.000.
Moriarity, Thomas C., to PPG Industries, Inc. Low temperature urethane curing agents. 4,452,963, Cl. 528-49.000.
Moriguchi, Koichi: *See*—
Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.
Moriuchi, Shigenori: *See*—
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Morley, Robert G.: *See*—
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Morozov, Jury E.: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,452,295, Cl. 164-186.000.
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Morris, Delwyn L.: *See*—
Isherwood, Jeffrey; and Morris, Delwyn L., 4,452,140, Cl. 101-181.000.
Morris, Earl L.; Hahn, Ron T.; and Sally, Theodore J., to Acorn Engineering Company. Vandal-resistant light fixture. 4,453,202, Cl. 362-147.000.

Morris, Richard L., to Outboard Marine Corporation. Engine with belt means connecting a flywheel pulley a governor drive pulley, and a cooling liquid pump drive pulley. 4,452,193, Cl. 123-195.00R.

Morris, Robert L.: *See—*
Santilli, Arthur A.; Scotese, Anthony C.; Morris, Robert L.; and Bell, Stanley C., 4,452,985, Cl. 548-131.000.

Moser, Winfried: *See—*
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Moskalik, Leonid M.: *See—*
Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.

Mostek Corporation: *See—*
Terry, Michael B., 4,453,037, Cl. 179-16.00F.

Motorola, Inc.: *See—*
Joseph, Eric D., 4,453,092, Cl. 307-355.000.
Murphy, Earl R., 4,453,142, Cl. 333-26.000.
Noufer, Glenn E., 4,453,121, Cl. 323-226.000.
Rapps, Gary M.; and Feder, Alvin, 4,453,104, Cl. 310-348.000.
Stamler, Michael M., 4,453,132, Cl. 330-107.000.
Wrathall, Robert S., 4,453,095, Cl. 307-475.000.

Motoyoshi, Junichi, to Canon Kabushiki Kaisha. Printer with ink correcting ribbon. 4,453,167, Cl. 346-76.0PH.

Motta, Bruno: *See—*
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Motzer, Helmut: *See—*
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Mowat, Donald J.; and Doman, H. Michael. Motorized vehicle. 4,452,327, Cl. 180-11.000.

Mueller, Alfred: *See—*
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Mueller, Denis A.: *See—*
Elms, Robert T.; Maynard, Pamela M.; and Mueller, Denis A., 4,453,117, Cl. 318-778.000.

Muessel, Dan C., to Rule Industries, Inc. Planetary gear winch comprising selectively operable freewheel arrangement. 4,452,429, Cl. 254-344.000.

Muhlbauer, Gerhard; Kagerhuber, Franz; Glatz, Werner; Feibermayer, Erich; and Kim, Leo, to Voest-Alpine Aktiengesellschaft. Carrying tower arrangement for a metallurgical vessel. 4,452,433, Cl. 266-142.000.

Muller, Bernard L.: *See—*
Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., 4,453,011, Cl. 568-322.000.

Muller, Berthold: *See—*
Clauss, Gerhard; and Muller, Berthold, 4,452,596, Cl. 493-107.000.

Muller, Dieter H.: *See—*
Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., 4,452,145, Cl. 102-501.000.

Muller, Eberhard: *See—*
Musch, Rudiger; Gobel, Wilhelm; Muller, Eberhard; and Konter, Wolfgang, 4,452,947, Cl. 525-194.000.

Muller, Johann; and Staudenrausch, Georg, to Albert Handtmann GmbH & Co. Apparatus for consecutively metering discrete amounts of a divisible mass, particularly sausage-meat. 4,451,954, Cl. 17-39.000.

Muller, Manfred: *See—*
Forberg, Horst; and Muller, Manfred, 4,452,502, Cl. 339-99.00R.

Muller, Reinhard. Shake resaw machine. 4,452,118, Cl. 83-871.000.

Munakata, Chusuke; and Kohno, Hideki, to Hitachi, Ltd. Scanning-image forming apparatus using photo response signal. 4,453,181, Cl. 358-101.000.

Mundt, Thomas R.: *See—*
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Murabayashi, Hidekazu: *See—*
Hirano, Yoshio; Tokunaga, Noriyuki; Murabayashi, Hidekazu; and Urayama, Takumi, 4,451,942, Cl. 4-420.200.

Muraguchi, Yutaka, to Hoko Sangyo Co., Ltd. Support structure for checking and repairing heavy rotatable objects. 4,452,558, Cl. 414-433.000.

Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, to Canon Kabushiki Kaisha. Liquid crystal display device for camera. 4,452,522, Cl. 354-289.120.

Muraki, Takeshi: *See—*
Kamiya, Soji; and Muraki, Takeshi, 4,452,866, Cl. 428-653.000.

Muranaka, Yoshiyuki: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,452,813, Cl. 424-303.000.

Murashko, Alexandr N.: *See—*
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Murman, Fernando: *See—*
Huey, Wai J.; Murman, Fernando; and Matsuda, Eugene, 4,452,421, Cl. 251-1.00B.

Murphy, Earl R., to Motorola Inc. Microstrip to waveguide transition. 4,453,142, Cl. 333-26.000.

Murphy, Preston V., to Lectret S.A. Electro-acoustic transducer with plural piezoelectric film. 4,453,044, Cl. 179-110.00A.

Murray: James G.: *See—*
Chester, Arthur W.; Murray: James G.; and Schwartz, Albert B., 4,452,958, Cl. 526-130.000.

Murray, Peter E.: *See—*
Conrad, Horst; Kretzschmar, Wolfgang; and Murray, Peter E., 4,452,504, Cl. 339-263.00R.

Muscat, Gerard, to Societe Anonyme DBA. Drum brake. 4,452,344, Cl. 188-79.5GT.

Musch, Rudiger; Gobel, Wilhelm; Muller, Eberhard; and Konter, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of sulphur-modified solid chloroprene rubbers. 4,452,947, Cl. 525-194.000.

Muse, Jimmy L. Cotton harvester. 4,452,134, Cl. 100-90.000.

Musgrave, Daniel D. Magazine filling guide. 4,452,002, Cl. 42-87.000.

Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, to Olympus Optical Company, Ltd. Method and apparatus for controlling the focusing and tracking of a light beam using a main and secondary light beam in association with multiple detectors. 4,453,239, Cl. 369-45.000.

Myers, Connie S.: *See—*
Wagemann, Dolores M.; and Myers, Connie S., 4,451,932, Cl. 2-80.000.

N. Schlumberger & Cie: *See—*
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Naarden International N.V.: *See—*
Van der Weerdt, Antonius J. A., 4,453,014, Cl. 568-373.000.

Nabisco Brands, Inc.: *See—*
D'Amelia, Ronald P.; Stroz, John J.; and Kachikian, Rouben, 4,452,820, Cl. 426-3.000.
Klacik, Kenneth J.; Vink, Walter V.; and Fronczkowski, Paul R., 4,452,825, Cl. 426-658.000.

Nachbur, Hermann; and Guth, Christian, to Ciba-Geigy Corporation. Phosphonic acid salts, their preparation and their use for fireproofing organic fibre material. 4,452,849, Cl. 428-264.000.

Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of aqueous dispersions or solutions of polyurethane polyureas containing heat activated cross-linking agents, the dispersions or solutions obtainable by this process, and their use for the production of coatings. 4,452,834, Cl. 427-379.000.

Nadelson, Jeffrey: *See—*
Brand, Leonard J.; and Nadelson, Jeffrey, 4,453,001, Cl. 548-466.000.

Nagai, Hideo; and Koga, Fumio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Jidosha Kabushiki Kaisha. Cargo containers. 4,452,366, Cl. 220-4.00R.

Nagai, Shousuke: *See—*
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.

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Naito, Hiroyuki: *See—*
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Fukuda, Masao; and Nakada, Etsuo, 4,452,537, Cl. 368-74.000.

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Kawamura, Yoshihisa; Shioyama, Giichi; Nakagawa, Toyoaki; and Nakajima, Masao, 4,452,217, Cl. 123-571.000.

Nakajima, Masao: *See—*
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Hozumi, Norimi; and Nakajima, Nobuyuki, 4,452,276, Cl. 138-30.000.

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Hamakawa, Yoshihiro; and Nakajima, Yosuke, 4,453,184, Cl. 358-213.000.

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Kuzma, Petr; and Odorisio, Giovanina, 4,452,925, Cl. 523-106.000.

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Batinovich, Victor A., 4,451,972, Cl. 29-583.000.

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NBS, Inc.: *See*—
Bourke, Robert E., 4,452,465, Cl. 280-403.000.

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Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.

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NeoMed Corporation: *See*—
Ecanow, Charles S., 4,452,780, Cl. 424-150.000.

Netzer, Yishav. Vertical indicating method and device. 4,451,991, Cl. 33-396.000.

Neuerburg, Horst, to Kuhn, S.A. Elongated cutting mechanism having a removable lateral shield. 4,452,034, Cl. 56-320.100.

Neuroth, David H., to Harvey Hubbell Incorporated. Oil well cable. 4,453,035, Cl. 174-103.000.

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New Age Industries, Inc.: *See*—
Shaffer, James E., 4,452,102, Cl. 74-801.000.

New Balance Athletic Shoe, Inc.: *See*—
Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., 4,451,996, Cl. 36-129.000.

Newns, George R.: *See*—
Beales, Keith J.; Duncan, William J.; Dunn, Anthony G.; and Newns, George R., 4,452,508, Cl. 350-96.310.

Ng, Paul K.; and Dobkin, Milton B., to Cutter Laboratories, Inc. Cell growth medium supplement. 4,452,893, Cl. 435-240.000.

NHK Spring Co., Ltd.: *See*—
Shinbori, Takeyoshi; and Kimura, Yoshio, 4,452,435, Cl. 267-36.00A.

Nibble With Gibble's, Inc.: *See*—
Oakes, William J., 4,452,671, Cl. 202-185.00A.

Nibler, Allen R. Wetting device for toilet paper. 4,451,943, Cl. 4-661.000.

Nickel, John: *See*—
Rynik, Milan; and Nickel, John, 4,452,114, Cl. 83-100.000.

Nickey, Donald O.; and Parker, Dane K., to Goodyear Tire & Rubber Company, The. Method for the application of triacontanol to soybeans to achieve a substantial increase in yield. 4,452,632, Cl. 71-122.000.

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Nielsen, Bradley B.: *See*—
Wright, Mervin E.; Peyraud, Sheila C.; and Nielsen, Bradley B., 4,452,619, Cl. 55-521.000.

Nihon Kogyo Kabushiki Kaisha: *See*—
Kawauchi, Susumu; Honda, Junji; Nishikawa, Kiyoaki; and Tsuji, Masahiro, 4,452,757, Cl. 420-471.000.

Nihon Radiator Co., Ltd.: *See*—
Sawabe, Mitsuo; and Imai, Kouichi, 4,453,102, Cl. 310-237.000.

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Nikolaev, Vyacheslav P.: *See*—
Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.

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Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.

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Nilsson, Rune: *See*—
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Nimberger, Spencer M.: *See*—
Sullivan, William C.; and Nimberger, Spencer M., 4,452,100, Cl. 74-711.000.

Nippon Electric Co., Ltd.: *See*—
Mizoguchi, Tetsuya; Sato, Fumitaka; and Furukatsu, Tadanobu, 4,453,230, Cl. 364-900.000.
Ryu, Toshihiko, 4,453,256, Cl. 375-15.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Yokoshima, Minoru; Nawata, Kazuyoshi; Hironaka, Tetsuo; and Takahashi, Hideaki, 4,452,996, Cl. 560-185.000.

Nippon Kogaku K.K.: *See*—
Hamanishi, Yoshinari, 4,452,513, Cl. 350-428.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Numano, Masachika; and Akita, Shinji, 4,452,061, Cl. 72-201.000.

Nippon Paint Co., Ltd.: *See*—
Ishikura, Shinichi; Yoshioka, Tamotsu; and Mizuguchi, Ryuzo, 4,452,746, Cl. 260-501.120.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,452,069, Cl. 73-35.000.
Iwamoto, Kenzi; Kawai, Hisasi; Matushiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,452,187, Cl. 123-90.160.
Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, 4,452,203, Cl. 123-403.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Komiya, Kazumi; and Kanzaki, Minoru, 4,453,187, Cl. 358-213.000.

Nippon Zeon Co. Ltd.: *See*—
Kubo, Yoichiro; and Oura, Kiyomori, 4,452,951, Cl. 525-339.000.

Nippondenso Co., Ltd.: *See—*
Haraguchi, Hiroshi; Narita, Ko; and Iwata, Toshiharu, 4,452,206, Cl. 123-425.000.
Takasu, Yasuhito; Hosoe, Katsuharu; and Iwata, Toshiharu, 4,452,205, Cl. 123-419.000.

Nishi, Sunao: *See—*
Amano, Tomiaki; Eda, Tetsuya; Nishi, Sunao; Shichiri, Shigeyoshi; and Fukunaga, Takayuki, 4,452,296, Cl. 164-363.000.

Nishihira, Keig: *See—*
Tahara, Susumu; Fujii, Kozo; Nishihira, Keig; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,453,026, Cl. 568-864.000.

Nishijima, Masayuki; Koizumi, Morimasa; and Matsuda, Minoru, to Sanyo-Kokusaku Pulp Co., Ltd. Baking and cooking tray sheet and its manufacturing method. 4,452,859, Cl. 428-340.000.

Nishikawa, Kiyoaki: *See—*
Kawauchi, Susumu; Honda, Junji; Nishikawa, Kiyoaki; and Tsuji, Masahiro, 4,452,757, Cl. 420-471.000.

Nishikawa, Mikio: *See—*
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michic; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

Nishikawa, Toyotaka: *See—*
Sauer, Hans; Nishikawa, Toyotaka; and Oberndorfer, Johannes, 4,453,195, Cl. 361-156.000.

Nishio, Ken-ichi: *See—*
Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,452,865, Cl. 428-614.000.

Nishizawa, Rinzo: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,453,003, Cl. 562-448.000.

Nissan Jidosha Kabushiki Kaisha: *See—*
Nagai, Hideo; and Koga, Fumio, 4,452,366, Cl. 220-4.00R.

Nissan Motor Company, Limited: *See—*
Fujioka, Kazuyoshi, 4,452,101, Cl. 74-733.000.
Hayashi, Yoshimasa, 4,452,192, Cl. 123-195.00R.
Kadota, Shinkichi, 4,452,494, Cl. 303-6.00C.
Kano, Hisae; Suzuki, Hideo; and Nakao, Hideo, 4,452,483, Cl. 296-213.000.
Kawamura, Yoshihisa; Shioyama, Giichi; Nakagawa, Toyoaki; and Nakajima, Masao, 4,452,217, Cl. 123-571.000.
Matsubara, Yuji, 4,452,204, Cl. 123-417.000.
Ohara, Yoshiaki; and Yabuhara, Hideo, 4,452,209, Cl. 123-489.000.
Takase, Sadao, 4,452,212, Cl. 123-493.000.

Nitto Boseki Co., Ltd.: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,452,736, Cl. 260-112.50R.

Nitz, Rolf-Eberhard: *See—*
Schonafinger, Karl; Beyerle, Rudi; Nitz, Rolf-Eberhard; Martorana, Piero A.; and Fiedler, Volker, 4,452,797, Cl. 424-250.000.

NMI Limited: *See—*
Richardson, John R., 4,451,950, Cl. 14-18.000.

Noel, Jean P., to Compagnie Industrielle de Mecanismes. Latch, in particular for an automobile vehicle door. 4,452,058, Cl. 70-137.000.

Noguchi, Kohji: *See—*
Uchida, Takateru; Noguchi, Kohji; and Kiyota, Takao, 4,452,918, Cl. 521-52.000.

Noguchi, Masaharu: *See—*
Utsumi, Atsushi; and Noguchi, Masaharu, 4,452,623, Cl. 65-3.120.

Noll, Klaus: *See—*
Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, 4,452,834, Cl. 427-379.000.

Nomura, Shigeru; Miyakawa, Masashi; and Asahina, Ken-ichi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Interlayer film for laminated glass. 4,452,935, Cl. 524-290.000.

Norakidze, Georgy G.; Sakandelidze, Ramaz M.; Sitnikov, Eduard K.; and Khomeriki, Otar K. Key switch. 4,453,148, Cl. 335-205.000.

Nordlund, Lester H., to Boeing Company, The. Electromechanical actuator counter-EMF utilization system. 4,453,114, Cl. 318-376.000.

Norman, Vello; and Ihrig, Arthur M., to Loews Theatres, Inc. Smoking articles having a reduced free burn time. 4,452,259, Cl. 131-349.000.

North American Philips Corporation: *See—*
Stupp, Edward H.; Fellows, Mark W.; Steneck, Walter G.; and Spataro, Vincent J., 4,453,109, Cl. 315-219.000.

Northern Telecom Limited: *See—*
Bennett, Jeffrey H., 4,453,130, Cl. 330-51.000.
Bennett, Jeffrey H., 4,453,143, Cl. 333-28.00R.
Brown, Michael; and Johnson, David W., 4,453,062, Cl. 200-314.000.
Zielinski, Lech S.; Lafrance, Conrad; and Wojcik, Jacek J., 4,453,043, Cl. 179-90.0BD.

Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., to New Balance Athletic Shoe, Inc. Athletic shoe with collar. 4,451,996, Cl. 36-129.000.

Norton, Willard S.; and Samuelson, Robert G., to Norton, Willard S. Structure and method for reinforcing a wall. 4,452,028, Cl. 52-744.000.

Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Sugawara, Masaaki, to Mizusawa Industrial Chemicals Ltd. Hydraulic cement composition. 4,452,635, Cl. 106-74.000.

Notter, Arsene, to Societe Alsacienne de Construction Mecaniques de Mulhouse. System for mounting harness frames in a weaving loom. 4,452,282, Cl. 139-88.000.

Noufer, Glenn E., to Motorola, Inc. Reference voltage generator. 4,453,121, Cl. 323-226.000.

Novozhilov, Alexandr N.: *See—*
Kletsel, Mark Y.; Polyakov, Valentin E.; Novozhilov, Alexandr N.; Solodukhin, Ivan N.; Chepeljuk, Yakov Z.; and Baida, Dmitry F., 4,453,190, Cl. 361-31.000.

Nozawa, Yasushi; Kokubo, Tadayoshi; Itoh, Isamu; and Kitaguchi, Hiroshi, to Fuji Photo Film Co., Ltd. Heat-developable photographic material. 4,452,885, Cl. 430-614.000.

Nozawa, Yoshikuni, to Entac Co., Ltd. Flat coil element for an electric motor and method of manufacturing the same. 4,453,100, Cl. 310-203.000.

NPI New Products Investment AB: *See—*
Pettersson, Bengt O., 4,452,662, Cl. 156-562.000.

NRM Corporation: *See—*
Sheerer, Paul M.; and Rupp, Dallas B., 4,452,576, Cl. 425-38.000.

Nukem GmbH: *See—*
Huschelrath, Gerhard; and Laudenbach, Karl, 4,452,086, Cl. 73-643.000.

Numano, Masachika; and Akita, Shinji, to Nippon Kokan Kabushiki Kaisha. Seamless steel pipe manufacturing installation. 4,452,061, Cl. 72-201.000.

Nuppula, Gerald W.: *See—*
Gelardi, Anthony L.; Nuppula, Gerald W.; and Phillippe, James, 4,452,404, Cl. 242-71.800.

Nyman, Bror G.: *See—*
Fugleberg, Sigmund P.; Nyman, Bror G.; Hultholm, Stig-Erik; Parviainen, Asko; and Rastas, Jussi, 4,452,762, Cl. 423-54.000.

O. Ames Co.: *See—*
Eads, Harold O.; Fowler, Ronald R.; and Adams, Danny C., 4,452,468, Cl. 280-641.000.

Oakes, Billy D.; Dupart, Michael S.; and Cringle, David C., to Dow Chemical Company, The. Bismuth inhibitors for acid gas conditioning solutions. 4,452,764, Cl. 423-228.000.

Oakes, William J., to Nibble With Gibble's, Inc. Oil separation and heat recovery system. 4,452,671, Cl. 202-185.00A.

Obama, Isamu; and Yamamoto, Yoshihisa, to Japan Exlan Co., Ltd. Carbon fibers and process for producing the same. 4,452,860, Cl. 428-367.000.

Obayashi, Akira: *See—*
Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, 4,452,897, Cl. 435-280.000.

Oberndorfer, Johannes: *See—*
Sauer, Hans; Nishikawa, Toyotaka; and Oberndorfer, Johannes, 4,453,195, Cl. 361-156.000.

O'Brien, Mark J., to Kona Associates Limited Partnership. Boomerang. 4,452,461, Cl. 273-426.000.

O'Connor, Robert J.: *See—*
Goodrich, Robert R.; Krumreich, Charles L.; and O'Connor, Robert J., 4,451,948, Cl. 7-107.000.

O'Dell, Leonard J., to Allis-Chalmers Corporation. Dirty gas inlet for a filter in a baghouse installation. 4,452,617, Cl. 55-341.00R.

Odorisio, Giovanina: *See—*
Kuzma, Petr; and Odorisio, Giovanina, 4,452,925, Cl. 523-106.000.

Ogasawara, Terumi: *See—*
Shikano, Tohru; and Ogasawara, Terumi, 4,453,185, Cl. 358-228.000.

Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape cassette having a reel braking mechanism. 4,452,407, Cl. 242-198.000.

Ogawa, Kazuo: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,452,813, Cl. 424-303.000.

Ogawa, Kimio: *See—*
Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,452,407, Cl. 242-198.000.

Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, to Canon Kabushiki Kaisha. Photoconductive member with multiple amorphous Si layers. 4,452,874, Cl. 430-57.000.

Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, to Canon Kabushiki Kaisha. Amorphous photoconductive member with α-Si interlayers. 4,452,875, Cl. 430-57.000.

Ogino, Saburo; Taniguchi, Yoshitomo; and Kiyoshima, Satoshi, to Fuji Jukogyo Kabushiki Kaisha. Air aspiration device of aircraft-mounted gas-turbine engine. 4,452,266, Cl. 137-15.100.

O'Grady, Hedwig: *See—*
Deckner, George E.; O'Grady, Hedwig; and Zofchak, Albert, 4,452,989, Cl. 548-537.000.

Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, to Kawasaki Steel Corporation. Method of stirring molten metal and refractory cylinder for the purpose. 4,452,634, Cl. 75-93.00R.

Ogura, Tomoki, to Tokyo Shibaura Denki Kabushiki Kaisha. Document feed control during copy paper jams. 4,452,525, Cl. 355-14.00R.

Ohara, Yoshiaki; and Yabuhara, Hideo, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system for an internal combustion engine. 4,452,209, Cl. 123-489.000.

Ohno, Masaji: *See—*
Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, 4,452,897, Cl. 435-280.000.

Ohoka, Masaharu: *See—*
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.

Ohshita, Takahiro: *See*—
Ishihara, Hideo; Ohshita, Takahiro; and Saito, Harumitsu, 4,452,155, Cl. 110-346.000.

Oizumi, Toshiro; Ito, Tetsuro; and Yamada, Shigeo, to Mitsubishi Denki Kabushiki Kaisha. Electric discharge machine including rocking motion fine machining and controls therefore. 4,453,071, Cl. 219-69.00G.

Oka, Tateki: *See*—
Tabuchi, Kenji; and Oka, Tateki, 4,452,173, Cl. 118-652.000.

Okabayashi, Shigeo: *See*—
Suzukawa, Yuichi; Kobayashi, Waichi; Okabayashi, Shigeo; and Ichinose, Hidefumi, 4,452,637, Cl. 106-89.000.

Okada, Yoshihito: *See*—
Urushihara, Koji; Okada, Yoshihito; and Komori, Haruyuki, 4,452,418, Cl. 248-666.000.

Okamoto, Fumio; and Kato, Katsuhiro, to RCA Corporation. Solid particles encapsulated with cyanoacrylate polymer. 4,452,861, Cl. 428-402.240.

Okamoto, Hidemasa; Yamanaka, Mitsuo; and Takahashi, Mokoto, to UBE Industries, Ltd. Flame-retardant polyamide resin composition. 4,452,931, Cl. 524-100.000.

Okazaki, Mari: *See*—
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; and Okazaki, Mari, 4,452,687, Cl. 204-428.000.

Oku, Masaharu: *See*—
Kanamaru, Hisanobu; and Oku, Masaharu, 4,452,060, Cl. 72-117.000.

Okutsu, Eiichi: *See*—
Akimura, Yoshitaka; Okutsu, Eiichi; Moriuchi, Shigenori; Saeki, Naomi; Hashimura, Taiji; and Mifune, Hiroyuki, 4,452,882, Cl. 430-441.000.

Olin Corporation: *See*—
Caule, Elmer J., 4,452,650, Cl. 148-31.500.
Ungarean, Gary L.; Yarwood, John C.; Kindlmann, Peter J.; and Tyler, Derek E., 4,452,297, Cl. 164-467.000.
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., 4,452,685, Cl. 204-252.000.

Oliveira, Paul E., to Goodyear Tire & Rubber Company, The. Unsupported shaped sound barrier component. 4,452,841, Cl. 428-174.000.

Oliver, Bernard W., Jr.: *See*—
Sandhu, Mohammad A.; Dannelly, Clarence C.; and Oliver, Bernard W., Jr., 4,452,008, Cl. 47-57.600.

Ollivier, Jean, to Societe Nationale Elf Aquitaine. Process and apparatus for the photochemical production of halogeno-alkanes and cycloalkanes. 4,452,678, Cl. 204-163.00R.

Olsen, Ronald H.; and Vandenbergh, Peter A., to Microlife Genetics, Inc. Pseudomonas compositions. 4,452,894, Cl. 435-253.000.

Olson, Arne P.: *See*—
Groh, Edward F.; Olson, Arne P.; Wade, David C.; and Robinson, Bryan W., 4,452,754, Cl. 376-335.000.

Olsson, John A. G. Exposure and printing easel, especially for dye transfer printing. 4,452,529, Cl. 355-72.000.

Olympus Optical Company, Ltd.: *See*—
Musha, Tohru; Kato, Kiichi; and Ito, Kenichi, 4,453,239, Cl. 369-45.000.
Takase, Hiroshi, 4,452,512, Cl. 350-426.000.
Takekawa, Hiroshi, 4,452,759, Cl. 422-73.000.
Utsugi, Mikio, 4,452,236, Cl. 128-4.000.

Omata, Katsumori, to Far East Engineering Company, Ltd. Electrolyte impregnating device for capacitor elements. 4,452,170, Cl. 118-50.000.

Onahama Seiren Kabushiki Kaisha: *See*—
Kono, Hiroshi; and Asao, Haruhiko, 4,452,154, Cl. 110-346.000.

O'Neill, Robert M.: *See*—
Peavey, Hartley D.; and O'Neill, Robert M., 4,452,333, Cl. 181-144.000.

Ono, Hitohsi: *See*—
Arisawa, Takashi; Maruyama, Yoichiro; Imahori, Seiichi; Kaneko, Masaharu; and Ono, Hitohsi, 4,453,252, Cl. 372-53.000.

Ono, Yutaka: *See*—
Yoshioka, Keiichi; Kinoshita, Noboru; and Ono, Yutaka, 4,452,649, Cl. 148-37.000.

Onodera, Kenji: *See*—
Takeuchi, Shin; and Onodera, Kenji, 4,452,137, Cl. 101-93.220.

Oohara, Mikio: *See*—
Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, 4,452,160, Cl. 112-410.000.

Ookouchi, Motomi: *See*—
Katakura, Masayuki; Akagiri, Kenzo; and Ookouchi, Motomi, 4,453,091, Cl. 307-350.000.

Ootsuka, Yoshinori: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,452,069, Cl. 73-35.000.

Oparowski, Paul: *See*—
Norton, Edward J.; Oparowski, Paul; and Belavitch, Alphonse L., 4,451,996, Cl. 36-129.000.

Optimetrix Corporation: *See*—
Johannsmeier, Karl-Heinz; and Phillips, Edward H., 4,452,526, Cl. 355-43.000.

Optische Werke G. Rodenstock: *See*—
Spitznas, Manfred, 4,452,514, Cl. 351-206.000.

O'Rear, Jacques G.: *See*—
Griffith, James R.; and O'Rear, Jacques G., 4,452,998, Cl. 560-221.000.

Orlandea, Nicolae V., to Deere & Company. Drive sprocket and track configuration. 4,452,495, Cl. 305-11.000.

Orlov, Anatoly A.: *See*—
Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.

Orr, Alfred B.: *See*—
Monhardt, Richard J.; Orr, Alfred B.; Premont, Emile J.; and Wright, Joseph B., 4,452,565, Cl. 415-9.000.

Osato, Yoichi: *See*—
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,452,874, Cl. 430-57.000.
Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Misumi, Teruo, 4,452,875, Cl. 430-57.000.

Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, to Toyota Jidosha Kabushiki Kaisha; and Nippon Soken, Inc. Three position diesel engine intake air throttling system. 4,452,203, Cl. 123-403.000.

Osman, Fazil I., to Burroughs Corporation. Error-correcting memory with low storage overhead and fast correction mechanism. 4,453,251, Cl. 371-51.000.

Ota, Hiroshi: *See*—
Terai, Akio; Miyauchigo, Takashi; and Ota, Hiroshi, 4,452,479, Cl. 294-88.000.

Otake, Hiroshi: *See*—
Tamura, Toshiaki; Otani, Yoshiaki; Otake, Hiroshi; and Yamamura, Masami, 4,453,144, Cl. 333-140.000.

Otani, Yoshiaki: *See*—
Tamura, Toshiaki; Otani, Yoshiaki; Otake, Hiroshi; and Yamamura, Masami, 4,453,144, Cl. 333-140.000.

Otis Engineering Corporation: *See*—
Schwendemann, Kenneth L., 4,452,305, Cl. 166-117.500.
Speegle, Steven C.; Vinzant, Michael B.; and Sullivan, Vinson D., 4,452,311, Cl. 166-324.000.

Ott, Helmut; and Motzer, Helmut, to Herion-Werke KG. Pressure regulating valve. 4,452,267, Cl. 137-116.500.

Oudelaar, Tone, to Applied Power Inc. Cabtilt system with synchronizing valve. 4,452,328, Cl. 180-89.140.

Oura, Kiyomori: *See*—
Kubo, Yoichiro; and Oura, Kiyomori, 4,452,951, Cl. 525-339.000.

Outboard Marine Corporation: *See*—
Morris, Richard L., 4,452,193, Cl. 123-195.00R.

Outokumpu Oy: *See*—
Santanen, Onni, 4,452,434, Cl. 266-159.000.

Ovchar, Vladimir G.: *See*—
Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.

Owens-Corning Fiberglas Corporation: *See*—
Zion, Earl M., 4,452,314, Cl. 166-378.000.

Owoc, James R., to Kerotest Manufacturing Corp. Bent bellows sealed rotary valve. 4,452,426, Cl. 251-335.00B.

Oximetrix, Inc.: *See*—
Sperinde, Johnie M.; Goldring, Stanley D.; and Miller, Dean T., 4,453,218, Cl. 364-416.000.

Ozin, Geoffrey A.; and Andrews, Mark P. Metal carbon catalyst preparation. 4,452,913, Cl. 502-184.000.

Paccar Inc.: *See*—
Stone, Thomas R.; and Penzotti, Roger P., 4,452,329, Cl. 180-89.150.

Packaging By Forming Industries, Inc.: *See*—
Pearce, Don J.; and Pearce, Richard J., 4,452,373, Cl. 220-335.000.

Padalka, Valentin G.: *See*—
Axenov, Ivan I.; Belous, Vitaly A.; Padalka, Valentin G.; and Khoroshikh, Vladimir M., 4,452,686, Cl. 204-298.000.

Paganini, Bruno J.; Advani, Jeram G.; Whitely, Robert M.; and Hale, William J., to NCR Corporation. Signal compression apparatus and method. 4,453,267, Cl. 382-29.000.

Palanisamy, Ponnusamy; and Ewing, Keith E., to General Motors Corporation. Self-sealing thermally sensitive resistor and method of making same. 4,452,726, Cl. 252-518.000.

Palermo, Anthony, Jr.: *See*—
Resnick, Theodore A.; Dupuis, Walter A.; and Palermo, Anthony, Jr., 4,453,263, Cl. 378-112.000.

Palluel, Auguste L. L.: *See*—
Bowen, Thomas N. E.; Butler, Peter; and Palluel, Auguste L. L., 4,452,945, Cl. 525-161.000.

Palmer, Jay W.; and Gaynor, John C., to United States Gypsum Company. Phosphoanhydrite process. 4,452,770, Cl. 423-167.000.

Palnik, Karl, to Carolinch Company, The. Apparatus for selective electrolytic plating. 4,452,684, Cl. 204-206.000.

Pamingle, Herve: *See*—
Schulte-Elte, Karl-Heinrich; and Pamingle, Herve, 4,453,000, Cl. 560-256.000.

Panchal, Mary. Cooking utensil. 4,452,581, Cl. 425-464.000.

Paparizos, Christos: *See*—
Shaw, Wilfrid G.; Paparizos, Christos; and Callahan, James L., 4,453,006, Cl. 562-545.000.

Parisi, Michael A., to Xerox Corporation. Electrostatographic reproducing apparatus with spring loaded paper path. 4,452,524, Cl. 355-3.0FU.

Parker, Brian L.: *See—*
Gaither, Blaine D.; Farley, William W., IV; Johnson, Albert; and Parker, Brian L., 4,453,212, Cl. 364-200.000.

Parker, Dane K.; and Burlett, Donald J., to Goodyear Tire & Rubber Company, The. Process for the preparation of high molecular weight polymeric antidegradants. 4,452,939, Cl. 524-551.000.

Parker, Dane K.: *See—*
Nickey, Donald O.; and Parker, Dane K., 4,452,632, Cl. 71-122.000.

Parker, Dawood; and Delpy, David T., to University College London. Process and apparatus for polarographic determination of oxygen and carbon dioxide. 4,452,672, Cl. 204-1.00T.

Parker-Hannifin Corporation: *See—*
Kern, Peter W.; and Richter, James J., 4,451,955, Cl. 24-20.0CW.

Parker, Robert R.: *See—*
Di Gianfilippo, Dominic J.; and Parker, Robert R., 4,452,518, Cl. 353-25.000.

Parks, James O., to ACF Industries, Incorporated. Protective device for three phase inductances. 4,453,192, Cl. 361-92.000.

Partanen, Paul: *See—*
Suovaniemi, Osmo A.; Ekholm, Pertti; Jarnefelt, Johan; Kaukanen, Esko; and Partanen, Paul, 4,452,902, Cl. 436-517.000.

Parviainen, Asko: *See—*
Fugleberg, Sigmund P.; Nyman, Bror G.; Hultholm, Stig-Erik; Parviainen, Asko; and Rastas, Jussi, 4,452,762, Cl. 423-54.000.

Pastor, Peter M. Walker. 4,452,484, Cl. 297-6.000.

Patacca, Angelo M.: *See—*
Belanger, Homer J.; and Patacca, Angelo M., 4,452,563, Cl. 415-9.000.

Patchen, Paul, II; and Chen, Colin C., to Allis-Chalmers Corporation. Even temperature intercooler. 4,452,216, Cl. 123-563.000.

Pate, James R., to Harvey Hubbell Incorporated. Lighting fixture reflector. 4,453,203, Cl. 362-345.000.

Patel, Gordhanbhai N.; and Ivory, Dawn M., to Allied Corporation. Dialkoxycarbonylmethyleneurethane diynes. 4,452,995, Cl. 560-166.000.

Patrin, Jerold F.: *See—*
Larsen, Glenn L.; and Patrin, Jerold F., 4,452,185, Cl. 123-41.580.

Patterson, Philip M., to Gates Rubber Company, The. Toothed belt and sprocket. 4,452,594, Cl. 474-153.000.

Patton, Willard T., to RCA Corporation. Method of determining excitation of individual elements of a phase array antenna from near-field data. 4,453,164, Cl. 343-360.000.

Paul, Steven J., to Best Energy Systems For Tomorrow, Inc. DC To AC power inverter. 4,453,207, Cl. 363-139.000.

Paullus, Jeffrey O., to Auditronics, Inc. Transformer coupled amplifier circuit. 4,453,131, Cl. 330-97.000.

Pavlodarsky Industrialny Institut: *See—*
Kletsel, Mark Y.; Polyakov, Valentin E.; Novozhilov, Alexandr N.; Solodukhin, Ivan N.; Chepeljuk, Yakov Z.; and Baida, Dmitry F., 4,453,190, Cl. 361-31.000.

Payer, Wolfgang: *See—*
Bahadir, Mufit; and Payer, Wolfgang, 4,452,912, Cl. 502-111.000.

Payne, David B.: *See—*
Reeve, Michael H.; Millar, Colin A.; and Payne, David B., 4,452,506, Cl. 350-96.200.

PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Jouannetaud, Marie-Paule; Gesson, Jean-Pierre; and Jacquesy, Jean-Claude, 4,453,024, Cl. 568-768.000.

Pearce, Don J.; and Pearce, Richard J., to Packaging By Forming Industries, Inc. Jewelry box hinge structure. 4,452,373, Cl. 220-335.000.

Pearce, Richard J.: *See—*
Pearce, Don J.; and Pearce, Richard J., 4,452,373, Cl. 220-335.000.

Pearl, David R., to Gerber Garment Technology, Inc. Method and apparatus for sealing cut sheet material. 4,452,113, Cl. 83-56.000.

Pearson, Charles G.: *See—*
Wallace, John B.; and Pearson, Charles G., 4,452,098, Cl. 74-531.000.

Peavey Electronics Corp.: *See—*
Peavey, Hartley D.; and O'Neill, Robert M., 4,452,333, Cl. 181-144.000.

Peavey, Hartley D.; and O'Neill, Robert M., to Peavey Electronics Corp. Speaker system. 4,452,333, Cl. 181-144.000.

Peche, Gerhard; and Bialkowski, Gunter, to Siemens Aktiengesellschaft. Contact apparatus for vacuum switches. 4,453,054, Cl. 200-144.00B.

Pedain, Josef: *See—*
Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, 4,452,834, Cl. 427-379.000.

Peeva, Lilly B.: *See—*
Kolev, Kolyo T.; Peeva, Lilly B.; Djakov, Assen E.; Yankov, Rossen A.; Amov, Blagoy G.; and Stoyanov, Stoyan B., 4,452,827, Cl. 427-38.000.

Peickert, Wilfried R.: *See—*
Kou, Abraham H.; Busby, Michael G.; Polenske, Errol E.; and Peickert, Wilfried R., 4,452,090, Cl. 73-861.280.

Peil, William; Brown, Thomas A.; and Dissosway, Marc A., to General Electric Company. Threshold amplifier for IC fabrication using CMOS technology. 4,453,094, Cl. 307-451.000.

Pelc, Norbert J.; and Flax, Stephen W., to General Electric Company. Method and means for generating time gain compensation control signal for use in ultrasonic scanner and the like. 4,452,085, Cl. 73-631.000.

Pellerin Milnor Corporation: *See—*
Files, William C., 4,452,056, Cl. 68-242.000.

Penning, Ernst; Stanger, Bernd; and Mueller, Alfred, to BASF Aktiengesellschaft. Water-soluble partially saponified copolymers based on vinyl acetate and methyl acrylate and their use for delaying the polymerization of styrene. 4,452,949, Cl. 525-328.200.

Penzotti, Roger P.: *See—*
Stone, Thomas R.; and Penzotti, Roger P., 4,452,329, Cl. 180-89.150.

Pepoy, Louis J., to BASF Wyandotte Corporation. Preparation of chlorinated phthalocyanines. 4,452,740, Cl. 260-245.830.

Peracchio, Aldo A.: *See—*
Mathews, Douglas C.; and Peracchio, Aldo A., 4,452,335, Cl. 181-214.000.

Perch, Michael: *See—*
Kovacic, Joseph E.; Perch, Michael; and Kuchta, Bernard R., 4,452,670, Cl. 201-6.000.

Perkin-Elmer Corporation, The: *See—*
Buckley, William D., 4,453,262, Cl. 378-034.000.
La Fiandra, Carlo, 4,453,106, Cl. 313-331.000.

Perkin-Elmer Limited: *See—*
Ford, Michael A., 4,453,225, Cl. 364-525.000.

Pernyeszi, Joseph, to International Telephone and Telegraph Corporation. High voltage operational amplifier. 4,453,134, Cl. 330-255.000.

Person, Herman R., to Dale Electronics, Inc. Method and means for determining acceleration. 4,452,531, Cl. 356-28.500.

Pesce, Robert S.: *See—*
Fraser, Richard J.; Pesce, Robert S.; and Pizzuti, Donato F., 4,452,519, Cl. 354-126.000.

Peters, Dwight W.: *See—*
Dahlgren, Harold P.; Taylor, James E.; and Peters, Dwight W., 4,452,139, Cl. 101-148.000.

Peters, Thomas E.; and McColl, James R., to GTE Laboratories Incorporated. Variable color cathodoluminescent composition, method, and display device utilizing same. 4,453,179, Cl. 358-72.000.

Peterson, Francis C.: *See—*
Nelson, John F.; Lindsay, Ernest H., Jr.; Zeller, Albert M.; and Peterson, Francis C., 4,452,556, Cl. 411-377.000.

Peterson, James J.; and Taylor, Glenn N., to Kendall Company, The. Collection bag. 4,452,253, Cl. 128-766.000.

Peterson, Morris W.; and Hurst, Thomas B., to Babcock & Wilcox Company, The. Method for removing sulfur oxides from a hot gas. 4,452,765, Cl. 423-242.000.

Peterson, Robert B.; Finello, Ralph; and Denavit, George A., to M. W. Kellogg Company, The. Horizontal ammonia converter. 4,452,760, Cl. 422-148.000.

Petrillo, Edward W., Jr.: *See—*
Karanewsky, Donald S.; and Petrillo, Edward W., Jr., 4,452,790, Cl. 424-200.000.
Ryono, Denis E.; and Petrillo, Edward W., Jr., 4,452,791, Cl. 424-200.000.

Petrovich, Vojislav. Method of treating bacterial viral or parasitic diseases. 4,452,781, Cl. 424-164.000.

Pettersson, Bengt O., to NPI New Products Investment AB. Device for the fastening of buttons to a piece of garment or other textile product. 4,452,662, Cl. 156-562.000.

Peyraud, Sheila C.: *See—*
Wright, Mervin E.; Peyraud, Sheila C.; and Nielsen, Bradley B., 4,452,619, Cl. 55-521.000.

Pfizer Inc.: *See—*
Barth, Wayne E., 4,452,796, Cl. 424-246.000.
LaMattina, John L.; and Lipinski, Christopher A., 4,452,987, Cl. 548-343.000.
Rizzi, James P.; and Schnur, Rodney C., 4,452,806, Cl. 424-273.00R.

Pharmindustrie: *See—*
Boschetti, Egisto, 4,452,916, Cl. 521-38.000.

Philion, Richard E., to Sterling Drug Inc. Method of lowering blood pressure by α-{[arylalkylamino]alkyl}-4-hydroxy-3-(loweralkylsulfinyl)benzenemethanols. 4,452,816, Cl. 424-330.000.

Philip Morris, Inc.: *See—*
Edwards, William B., III, 4,452,984, Cl. 546-281.000.
Grollimund, Everett C.; and Martin, Peter, 4,452,532, Cl. 356-121.000.

Philipp, Hans-J. Frame for film diapositives. 4,451,998, Cl. 40-152.000.

Phillippe, James: *See—*
Gelardi, Anthony L.; Nuppula, Gerald W.; and Phillippe, James, 4,452,404, Cl. 242-71.800.

Phillips, Edward H.: *See—*
Johannsmeier, Karl-Heinz; and Phillips, Edward H., 4,452,526, Cl. 355-43.000.

Phillips, Graham R.; and Fisher, Marvin J., to Century Electric, Inc. Starting control circuit for a multispeed A.C. motor. 4,453,118, Cl. 318-779.000.

Phillips Petroleum Company: *See—*
Harder, Joseph R.; and Keesling, James E., 4,452,752, Cl. 264-555.000.

Pichler, Oswald: *See—*
Hetzelt, Stephan; and Pichler, Oswald, 4,452,467, Cl. 280-615.000.

Picker Corporation: *See—*
Resnick, Theodore A.; Dupuis, Walter A.; and Palermo, Anthony, Jr., 4,453,263, Cl. 378-112.000.

Pickett, Nigel P.: *See—*
Jackson, Kenneth; and Pickett, Nigel P., 4,453,076, Cl. 250-374.000.

Pierce, Jerry E., to Heat Transfer Engineering, Inc. Energy efficient water heating device and system. 4,452,050, Cl. 62-196.400.

Pigos, Charles R.: *See—*
Bernier, William E.; and Pigos, Charles R., 4,453,171, Cl. 346-165.000.

Pike, Daniel E., to AirPol, Inc. Double alkali process for removal of sulfur dioxide from gas streams. 4,452,766, Cl. 423-242.000.
Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Herbicidal 4-(benzotriazol-1-yl)phenoxy)alkanoic acids, esters and salts. 4,452,626, Cl. 71-92.000.
Pilot Precision Kabushiki Kaisha: *See*—
Sumita, Yo, 4,452,544, Cl. 401-53.000.
Pinamonti, Franco: *See*—
Dal Moro, Anacleto; and Pinamonti, Franco, 4,452,630, Cl. 71-111.000.
Pincon, Daniel M.: *See*—
David, Gerard R.; and Pincon, Daniel M., 4,453,030, Cl. 136-256.000.
Ping, David T.; Reeve, Edwin; and Webber, Philip S., to Townsotor Corporation. Apparatus and method for mounting a transmission. 4,452,332, Cl. 180-312.000.
Pitney Bowes Inc.: *See*—
Steinmetz, John H., 4,453,128, Cl. 324-403.000.
Pittway Corporation: *See*—
Conforti, Frederick J., 4,452,867, Cl. 429-7.000.
Pizzuti, Donato F.: *See*—
Fraser, Richard J.; Pesce, Robert S.; and Pizzuti, Donato F., 4,452,519, Cl. 354-126.000.
Plant, David F. Portable, auxiliary, radiant chimney effect heater. 4,452,225, Cl. 126-92.00B.
Plessey Overseas Limited: *See*—
Cullen, Ronald A., 4,452,352, Cl. 198-482.000.
Plett, Carl E., to DEC International, Inc. Valve for use in a suction line. 4,452,177, Cl. 119-14.320.
Plowman, Richard E., to Dentsply Research & Development Corp. Operatory stool with adjustable arm. 4,452,487, Cl. 297-411.000.
Plyler, Robert G.: *See*—
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,452,501, Cl. 339-91.00R.
Pneutek, Inc.: *See*—
Haytayan, Harry M., 4,452,387, Cl. 227-8.000.
Poag, Harold D., to Rockwell International Corporation. Newspaper stream forming device. 4,452,441, Cl. 271-93.000.
Poirot, Eugene M. System for enticing, enclosing and holding fish. 4,452,005, Cl. 43-100.000.
Polaroid Corporation: *See*—
Douglas, Lawrence M., 4,452,523, Cl. 354-303.000.
Fraser, Richard J.; Pesce, Robert S.; and Pizzuti, Donato F., 4,452,519, Cl. 354-126.000.
Kaplan, Jonathan I., 4,452,520, Cl. 354-126.000.
Locatell, Louis, Jr.; and Zepp, Charles M., 4,452,878, Cl. 430-215.000.
Polenske, Errol E.: *See*—
Kou, Abraham H.; Busby, Michael G.; Polenske, Errol E.; and Peickert, Wilfried R., 4,452,090, Cl. 73-861.280.
Pollard, Reginald B., to Firestone Tire & Rubber Company, The. Tire holding device and use thereof. 4,452,655, Cl. 156-126.000.
Polley, Jack L. Apparatus for detecting ruptures in drill pipe above and below the drill collar. 4,452,306, Cl. 166-155.000.
Polomski, Robert E., to Mobil Oil Corporation. Combined process for heavy oil upgrading and synthetic fuel production. 4,452,691, Cl. 208-86.000.
Polyakov, Valentin E.: *See*—
Kletsel, Mark Y.; Polyakov, Valentin E.; Novozhilov, Alexandr N.; Solodukhin, Ivan N.; Chepeljuk, Yakov Z.; and Baida, Dmitry F., 4,453,190, Cl. 361-31.000.
Polygram GmbH: *See*—
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Small, Leonard E., 4,452,713, Cl. 252-99.000.
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Propst, Robert L., to Herman Miller, Inc. Office seating with activity features. 4,452,449, Cl. 272-134.000.
Prosen, Gildo G., to CMI Models & Development Corp. Carrier for supporting paraphernalia. 4,452,385, Cl. 224-321.000.
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Tay-Lodge, John F.; and Proudlock, Bernard L., 4,452,219, Cl. 123-591.000.
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Quirke, Patric C.: *See*—
Semian, David W.; and Quirke, Patric C., 4,453,052, Cl. 200-85.00R.
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Rader, Helmut, to Monoflo International, Inc. Advanced poultry drinker construction. 4,452,179, Cl. 119-81.000.
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Raymaker, Charles A. Emergency body descender. 4,452,339, Cl. 182-232.000.

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Carlson, David E.; and Williams, Brown F., 4,453,173, Cl. 357-30.000.
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Prabhu, Ashok N.; and Hang, Kenneth W., 4,452,844, Cl. 428-209.000.
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Borges, Gary G.; and Rebholz, James H., 4,452,842, Cl. 428-195.000.

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Losel, Walter; Roos, Otto; Reichl, Richard; and Kuhn, Franz-Josef, 4,452,789, Cl. 424-258.000.

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Reid, Samuel I. Concrete production apparatus. 4,452,535, Cl. 366-22.000.

Reilly, Kevin J.: *See—*
Merlino, Paul J.; and Reilly, Kevin J., 4,453,113, Cl. 318-376.000.

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Hodgkins, Harry L.; and Reingruber, John K., 4,452,039, Cl. 60-207.000.

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Renneker, Dennis N.: *See—*
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Sachs, Frederick; and McGarrigle, Richard G., 4,452,249, Cl. 128-642.000.

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Rexnord Inc.: *See—*
Littrell, Denis G., 4,452,613, Cl. 55-96.000.

Reynolds, Alvin E. Method for corneal curvature adjustment. 4,452,235, Cl. 128-1.00R.

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Daugirda, Paul G.; and Clark, Keith R., 4,452,226, Cl. 126-373.000.

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Lubben, Manfred; and Witt, Wolfram, 4,452,653, Cl. 149-11.000.

Rhodes, Christopher. Holder for an insulated container of beverage. 4,452,369, Cl. 220-85.00H.

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Goletto, Jean; and Coquard, Jean, 4,452,974, Cl. 528-339.300.

Rhone-Poulenc Specialites Chimiques: *See—*
Desbois, Michel, 4,453,012, Cl. 568-323.000.

Rhythm Motor Parts Mfg. Co., Ltd.: *See—*
Kadota, Shinkichi, 4,452,494, Cl. 303-6.00C.

Rhythm Watch Co., Ltd.: *See—*
Fukuda, Masao; and Nakada, Etsuo, 4,452,537, Cl. 368-74.000.

Richard, Maurice E., to International Business Machines Corporation. Leader block for single reel tape cartridge. 4,452,406, Cl. 242-195.000.

Richard Wolf GmbH: *See—*
Hiltebrandt, Siegfried; and Bonnet, Ludwig, 4,452,546, Cl. 403-349.000.

Richards, Walter L., to Methane Drainage Ventures. Multiple level methane drainage shaft method. 4,452,489, Cl. 299-2.000.

Richardson, Donald A., to GTE Products Corporation. Tungsten-quartz seals. 4,452,677, Cl. 204-129.100.

Richardson, Donald C., to Texas Instruments Incorporated. Automatic gain control circuit. 4,453,258, Cl. 375-98.000.

Richardson, Edwin A., to Shell Oil Company. Process for measuring the volume change of a nitrogen-gas-stabilized cement. 4,452,898, Cl. 436-2.000.

Richardson, James D.: *See—*
Slaugh, Lynn H.; Schoenthal, Galeon W.; and Richardson, James D., 4,453,015, Cl. 568-406.000.

Richardson, John R., to NMI Limited. Long-span bridges. 4,451,950, Cl. 14-18.000.

Richardson, John S., Jr.: *See—*
Clevenger, James T., Jr.; Sheesley, Donald L.; and Richardson, John S., Jr., 4,452,032, Cl. 56-12.300.

Richers, David M., to Cities Service Company. Soil gas probe. 4,452,091, Cl. 73-864.520.

Richey, Clarence B. Downdraft channel biomass gasifier. 4,452,611, Cl. 48-111.000.

Richter, Ekkehard: *See—*
Knoblauch, Karl; Richter, Ekkehard; Grochowski, Horst; and Schwarte, Jurgen, 4,452,772, Cl. 423-569.000.

Richter, James J.: *See—*
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Rickmers, Clifford P.: *See—*
Brickner, Louis D.; Rickmers, Clifford P.; and Donovan, Bobby B., 4,452,117, Cl. 83-467.00R.

Ricks, Walter G.: *See—*
Hurley, Byron H.; and Ricks, Walter G., 4,452,377, Cl. 222-1.000.

Rieger, Franz: *See—*
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Riker Laboratories, Inc.: *See—*
Johnson, James D.; and Banitt, Elden H., 4,452,983, Cl. 546-233.000.
Scherrer, Robert A., 4,452,979, Cl. 544-58.700.

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Ballach, Reinhold; Kroll, Dieter; and Rinn, Jurgen, 4,452,109, Cl. 82-3.000.

Rios, Pedro A., to General Electric Company. Excitation lead for superconducting devices, particularly magnets. 4,453,149, Cl. 335-216.000.

Ripkens, Hans-Gerd: *See—*
Teetz, Wolfgang; Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, 4,452,156, Cl. 112-97.000.

Risch, Jon M.: *See—*
Maier, Bruce R.; and Risch, Jon M., 4,452,480, Cl. 294-104.000.

Ritchie, Kim; and Keller, Jed V., to AVX Corporation. Low cost thin film capacitor. 4,453,199, Cl. 361-306.000.

Rittenbach, Otto E., to United States of America, Army. Signal processor for plural frequency detection and tracking over predetermined range of frequencies. 4,453,137, Cl. 331-2.000.

Rittersdorf, Udo: *See—*
Robben, Paul J.; Legros, Raymond; and Rittersdorf, Udo, 4,451,958, Cl. 24-636.000.

Rivoir, Karl H. Bearing assembly for the movable member of a measuring instrument. 4,452,540, Cl. 384-99.000.

Rizzi, James P.; and Schnur, Rodney C., to Pfizer Inc. Treating diabetic complications with 5-(substituted phenyl)hydantoins. 4,452,806, Cl. 424-273.00R.

Robben, Paul J.; Legros, Raymond; and Rittersdorf, Udo, to Allied Corporation. Seat belt buckle with pivoting latch. 4,451,958, Cl. 24-636.000.

Robbins, Gary B., to Modco Industries, Incorporation. Closure safety device. 4,452,372, Cl. 220-316.000.

Robert Bosch GmbH: *See—*
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Latsch, Reinhard; and Maurer, Helmut, 4,452,189, Cl. 123-143.00B.
Leblanc, Jean; Rossignol, Francois; and Cigolotti, Jean Pierre, 4,452,574, Cl. 417-490.000.

Roberts, Derek A.: *See—*
Treby, John M.; and Roberts, Derek A., 4,452,567, Cl. 416-2.000.

Roberts, Robert L.; and Janssen, Felix G., to U.S. Environmental Products, Inc. Rigid filter plate and process for manufacture of the same. 4,452,698, Cl. 210-503.000.

Robinson, Bryan W.: *See—*
Groh, Edward F.; Olson, Arne P.; Wade, David C.; and Robinson, Bryan W., 4,452,754, Cl. 376-335.000.

Roblin, Jean-Paul, to Ateliers et Chantiers de Chantiers de Bretagne-ACB. Modular undersea oil production plant. 4,452,312, Cl. 166-339.000.

Roby, Mark S.: *See—*
Casey, Donald J.; and Roby, Mark S., 4,452,973, Cl. 528-354.000.

Rockey, Robert E.: *See—*
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Rockwell International Corporation: *See—*
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Dozier, Leonard C., 4,452,347, Cl. 188-330.000.
Liggett, John V., 4,452,493, Cl. 301-37.0SS.
Poag, Harold D., 4,452,441, Cl. 271-93.000.
Sullivan, William C.; and Nimberger, Spencer M., 4,452,100, Cl. 74-711.000.
Trcka, James S.; and Thorkildson, Robert J., 4,453,200, Cl. 362-31.000.
Zillhardt, Paul J., 4,452,497, Cl. 308-187.100.

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Rodenberger, Frank A.: *See—*
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Roder, Ulrich: *See—*
Brettel, Hans; Dietz, Wolfgang; Roder, Ulrich; Scherg, Christof; and Waidelich, Wilhelm, 4,452,083, Cl. 73-607.000.

Roelofs, Roelof: *See—*
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Rogers, Lloyd W., Jr., to General Motors Corporation. Seat belt junction ring. 4,452,469, Cl. 280-801.000.

Rogers, Samuel C., to United States of America, Energy. Tunable damper for an acoustic wave guide. 4,452,334, Cl. 181-175.000.

Rohm GmbH: *See—*
Besecke, Siegmund; Schroeder, Guenter; Siegert, Hermann-Josef; and Gaenzler, Wolfgang, 4,452,999, Cl. 560-233.000.

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Markert, Gerhard; Dreher, Dieter; Lehmann, Klaus; Siol, Werner; and Rauch, Hubert, 4,452,862, Cl. 428-407.000.

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Rolls Royce Ltd.: *See—*
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Romagosa, Alfredo A., to Harris Corporation. Error reporting scheme. 4,453,213, Cl. 364-200.000.

Romesberg, Floyd E.: *See—*
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Roos, Ernst: *See—*
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Roos, Otto: *See—*
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Rosati, Vincent J., to United States of America, Army. Suppression of vibration effects on piezoelectric crystal resonators. 4,453,141, Cl. 331-158.000.

Rosemont Industries, Inc.: *See—*
Majors, Curtis O., 4,452,016, Cl. 51-163.200.

Rosen, Meyer R., to Union Carbide Corporation. Polymer water-in-oil emulsions. 4,452,940, Cl. 524-801.000.

Rosevear, Alan, to United Kingdom Atomic Energy Authority. Immobilization of biologically active material in a hydrogel on a support. 4,452,892, Cl. 435-176.000.

Ross, Gray E. D. Cold start fuel/air mixture supply device for spark ignition internal combustion engines. 4,452,190, Cl. 123-179.00G.

Rossignol, Francois: *See—*
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Roth, Donald J., to Continental Group, Inc., The. Lightweight container. 4,452,368, Cl. 220-67.000.

Roth, Robert H.: *See—*
Last, Daniel F.; and Roth, Robert H., 4,452,301, Cl. 165-42.000.

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Sheerer, Paul M.; and Rupp, Dallas B., 4,452,576, Cl. 425-38.000.

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Ryu, Toshihiko, to Nippon Electric Co., Ltd. Adaptive equalizer system for quadrature amplitude modulation. 4,453,256, Cl. 375-15.000.

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Saint, David, to Graco Metal Products, Inc. Battery-operated child's swing. 4,452,446, Cl. 272-86.000.
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Sauer, Gerd; and Unbehaun, Dieter, 4,453,112, Cl. 318-281.000.
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Ishihara, Hideo; Ohshita, Takahiro; and Saito, Harumitsu, 4,452,155, Cl. 110-346.000.
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Geary, Carl H., Jr.; and Samurin, Norman A., 4,452,048, Cl. 60-656.000.
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Brand, Leonard J.; and Nadelson, Jeffrey, 4,453,001, Cl. 548-466.000.
Hardtmann, Goetz E.; and Houlihan, William J., 4,452,787, Cl. 424-251.000.
Sandoz Ltd.: *See*—
van Diest, Joseph; and Valenti, Salvatore, 4,452,606, Cl. 8-496.000.
Sanofi: *See*—
Macquet, Jean-Pierre, 4,452,812, Cl. 424-287.000.
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Watanabe, Eifu, 4,452,194, Cl. 123-195.00P.
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Kamimsky, Theo, 4,452,553, Cl. 408-162.000.
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Nishijima, Masayuki; Koizumi, Morimasa; and Matsuda, Minoru, 4,452,859, Cl. 428-340.000.
Saracsan, Jeffrey W., to Goodyear Tire & Rubber Company, The. Peroxide cured urethanes for application to rim and adhesives. 4,452,964, Cl. 528-75.000.
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Sasaki, Masatake: *See*—
Tanaka, Naoki; and Sasaki, Masatake, 4,453,243, Cl. 369-221.000.
Sasaki, Shin, to Sony Corporation. Tape cassette. 4,452,408, Cl. 242-199.000.
Sasayama, Takao; and Kato, Kazuo, to Hitachi, Ltd. Fuel injection valve drive circuit. 4,452,210, Cl. 123-490.000.
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Sato, Takashi; and Ishikawa, Masahisa, to Mitsubishi Monsanto Chemical Company. Plastic interlayer for lamination with heights of 10 to 500 microns. 4,452,840, Cl. 428-156.000.
Satoh, Masatoshi, to Kioritz Corporation. Engine-driven blower/dust collector. 4,451,951, Cl. 15-330.000.
Satta, Giuseppe: *See*—
Merlini, Luigi; Bassi, Aldo; and Satta, Giuseppe, 4,452,208, Cl. 123-481.000.
Sauer, Gerd; and Unbehaun, Dieter, to Saint-Gobain Vitrage. Electronic safety device for controlling the drive motor attached to a sliding window. 4,453,112, Cl. 318-281.000.
Sauer, Hans; Nishikawa, Toyotaka; and Oberndorfer, Johannes, to SDS Elektro GmbH; and Matsushita Electric Works Ltd. Relay plug socket. 4,453,195, Cl. 361-156.000.
Sawabe, Mitsuo; and Imai, Kouichi, to Nihon Radiator Co., Ltd.; and Toho Tekko Co., Ltd. Commutator for flat motor. 4,453,102, Cl. 310-237.000.
Scaramucci, John P. Bonnet locking system for a valve. 4,452,428, Cl. 251-367.000.
Schachar, Ronald A. Cornea endothelial protection method. 4,452,600, Cl. 604-51.000.
Schade, Gerhard; and Uckert, Peter, to Dynamit Nobel AG. Polyether esters for the cementing of textiles. 4,452,853, Cl. 528-301.000.
Schade, Gerhard; Schmitthenner, Martin; and Volkommer, Norbert, to Dynamit Nobel AG. Polyester varnishes. 4,452,954, Cl. 525-440.000.
Schadt, Martin; Schleich, Kuno; and Trickes, Georg, to Hoffmann-La Roche Inc. Pyridazines. 4,452,718, Cl. 252-299.610.
Schaeffer, Andre; and Wagner, Antoine. Steam, water or heat developing diazotype material. 4,452,876, Cl. 430-162.000.
Schaire, Scott H., to Grumman Aerospace Corporation. Bus interface unit. 4,453,229, Cl. 364-900.000.
Schal, Wilfried: *See*—
Gersonde, Klaus; and Schal, Wilfried, 4,452,747, Cl. 264-4.100.
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Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Schamberg, Eckehard, 4,452,961, Cl. 528-26.000.
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Scheer, Richard, to ITT Corporation. Broadband injection locked oscillator system. 4,453,138, Cl. 331-47.000.
Scheithauer, Richard A.: *See*—
Miller, Michael J.; Scheithauer, Richard A.; Vanderpool, Clarence D.; and Husted, Eric F., 4,452,633, Cl. 75-0.50A.
Schellmann, Klaus: *See*—
List, Rainer; Schellmann, Klaus; and Schulze, Heinz, 4,452,186, Cl. 123-90.160.
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Shelomentsev, Timofei I.; Konstantinov, Vladimir A.; Yakubovich, Evgeny V.; Bratsky, Fedor F.; Geraschenko, Leonid I.; Shevchuk, Olga P.; Murashko, Alexandr N.; Lutsky, Vasily I.; Nekrashevich, Vladimir P.; Boglov, Alexandr M.; Muraviev, Valery P.; Shildkrot, Evgeny L.; and Scherbatjuk, Vladimir A., 4,452,074, Cl. 73-119.00A.
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Kreisel, Rudolf; and Meyer, Walter, 4,452,264, Cl. 134-58.00R.
Schering Corporation: *See*—
Sherlock, Margaret H., 4,452,800, Cl. 424-256.000.
Scherrer, Robert A., to Riker Laboratories, Inc. Process for making enamines. 4,452,979, Cl. 544-58.700.

Schetter, Thomas C., to Dana Corporation. Overdrive transmission for automotive vehicles. 4,452,094, Cl. 74-333.000.

Scheve, Bernard J.: *See*—
Brodsky, Gregory I.; and Scheve, Bernard J., 4,452,855, Cl. 428-290.000.

Schibbye, (Lars) Lauritz B.; and Johansson, Jan, to Svenska Rotormaskiner AB. Method and device for intermediate cooling in an oil-injected multi-stage screw compressor. 4,452,575, Cl. 418-1.000.

Schick, Jerome D., to International Business Machines Corporation. Determination of true electrical channel length of surface FET. 4,453,127, Cl. 324-71.300.

Schimanski, Georg; von Philipp, Fritz; and Hautmann, Horst, to Globol-Werk GmbH, Firma. Vaporizing device for perfumes, insecticides and/or other volatile active substances. 4,452,393, Cl. 239-57.000.

Schimmel, Gunther: *See*—
Gradl, Reinhard; Schimmel, Gunther; Krause, Werner; and Heymer, Gero, 4,452,768, Cl. 423-321.00R.

Schindel, Arnold, to Singer Company, The. Shaft braking mechanism utilizing non-permanent deforming brake shoe. 4,452,342, Cl. 188-69.000.

Schlachet, Hugo, to Bessam Manufacturing Company. Air conditioning system. 4,452,615, Cl. 55-227.000.

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Sterriker, James; and Schlechter, George, 4,452,024, Cl. 52-473.000.

Schleich, Kuno: *See*—
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Clavier, Christian M.; Hepp, Vincent R.; and Dumestre, Alexis C., 4,453,219, Cl. 364-422.000.
Gavignet, Alain H.; and Cubberly, Walter E., Jr., 4,452,076, Cl. 73-155.000.

Schmid, Klaus: *See*—
Kneissl, Hannes; and Schmid, Klaus, 4,452,692, Cl. 208-108.000.

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Schmidt, Donald R., to Energy Extension Industries. Full-flow and by-pass filter conversion system for internal combustion engines. 4,452,695, Cl. 210-168.000.

Schmitthenner, Martin: *See*—
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Schneider, Fritz W. High velocity mixing method. 4,452,919, Cl. 521-99.000.

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Schoenleber, Donald; and Mattia, James A., to Beatrice Foods Co. Double pocket ticket envelope. 4,452,399, Cl. 229-72.000.

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Slaugh, Lynn H.; Schoenthal, Galeon W.; and Richardson, James D., 4,453,015, Cl. 568-406.000.

Schoerner, William S., to Chicago Bridge & Iron Company. Heat exchanger with polymeric-covered cooling surfaces and crystallization method. 4,452,302, Cl. 165-133.000.

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Schorb, Herbert: *See*—
Roth, Dieter; Schorb, Herbert; and Kloss, Herbert, 4,453,249, Cl. 371-37.000.

Schramm, Burford J. Method for making a helicopter rotor blade. 4,452,658, Cl. 156-245.000.

Schroder, Rolf: *See*—
Lurssen, Klaus; Holmwood, Graham; Kramer, Wolfgang; Regel, Erik; Reiser, Wolf; and Schroder, Rolf, 4,452,625, Cl. 71-76.000.

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Deutsch, Wayne A.; Schroeder, James D.; and Hammel, Greg J., 4,452,003, Cl. 43-25.200.

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Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., 4,452,145, Cl. 102-501.000.

Schucker, Robert C.; and Wheelock, Kenneth S., to Exxon Research and Engineering Co. Process for increasing the activity of perovskite catalysts and hydrocarbon treating processes using the activated catalyst. 4,452,693, Cl. 208-121.000.

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Schuler, Bernhard: *See*—
Egbers, Gerhard; Schuler, Bernhard; Seidel, Adolf; and Buhler, Gunter, 4,452,053, Cl. 66-123.000.

Schulte-Elte, Karl H.; Snowden, Roger L.; and Muller, Bernard L., to Firmenich SA. Process for the preparation of α,β-and β,γ-unsaturated ketones. 4,453,011, Cl. 568-322.000.

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Schultz, Andrew: *See*—
Watanabe, Heary; and Schultz, Andrew, 4,452,731, Cl. 252-536.000.

Schulze, Everett E., Jr., to Imagination Properties, Inc.; and Carpenter & Associates. Rebound exerciser. 4,452,444, Cl. 272-65.000.

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Schuster, Carl J., to Elliott Turbomachinery Company, Inc. Assembly and disassembly apparatus for use with a rotary machine. 4,451,979, Cl. 29-824.000.

Schuster, Harald, to Licentia Patent-Verwaltungs-GmbH. Band pass filter. 4,453,145, Cl. 333-174.000.

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Schwarte, Jurgen: *See*—
Knoblauch, Karl; Richter, Ekkehard; Grochowski, Horst; and Schwarte, Jurgen, 4,452,772, Cl. 423-569.000.

Schwartz, Albert B.: *See*—
Chester, Arthur W.; Murray: James G.; and Schwartz, Albert B., 4,452,958, Cl. 526-130.000.

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Lenox, Ronald S.; Schwartz, Anne L.; and Sparks, Moses, Jr., 4,452,604, Cl. 8-471.000.

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Schwendemann, Kenneth L., to Otis Engineering Corporation. Kick-over tool with pivot arm retraction means. 4,452,305, Cl. 166-117.500.

Schwenk, Gerhard: *See*—
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SDS Elektro GmbH: *See*—
Sauer, Hans; Nishikawa, Toyotaka; and Oberndorfer, Johannes, 4,453,195, Cl. 361-156.000.

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Werner, David G., 4,452,020, Cl. 52-202.000.

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Bergman, Gunnar B., 4,452,165, Cl. 114-125.000.

Sebastiani, Enrico; and Archi, Augusto. Process for making pipe fitting components, and the components obtained thereby. 4,452,063, Cl. 72-356.000.

Segawa, Makoto: *See*—
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Seglin, Leonard; and Saller, Erik, to Intercontinental Econergy Associates, Inc. Recovery of hydrocarbons from deep underground deposits of tar sands. 4,452,491, Cl. 299-5.000.

Sehnem, Hans P., to Bayer Aktiengesellschaft. Process for the production of ethoxycarbonylmethyl 5-(2,6-dichloro-4-trifluoro-methylphenoxy)-2-nitro-α-phenoxy-propionate. 4,452,992, Cl. 560-21.000.

Seidel, Adolf: *See*—
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Seiko Seiki Kabushiki Kaisha: *See*—
Urushihara, Koji; Okada, Yoshihito; and Komori, Haruyuki, 4,452,418, Cl. 248-666.000.

Seino, Minoru; Yamazaki, Atsuo; Aoki, Toru; and Suzuki, Akihiko, to Konishiroku Photo Industry Co., Ltd. Process for developing positive photosensitive lithographic printing plate. 4,452,880, Cl. 430-309.000.

Sekii, Tsugio; and Jinbo, Kensaku, to Mitsubishi Denki Kabushiki Kaisha. Chassis dynamometer. 4,452,073, Cl. 73-117.000.

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Nomura, Shigeru; Miyakawa, Masashi; and Asahina, Ken-ichi, 4,452,935, Cl. 524-290.000.

Sell, Jeffery A.: *See*—
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Semerciyan, Mikayel: *See*—
Karklys, Joseph; and Semerciyan, Mikayel, 4,453,067, Cl. 219-10.49R.

Semian, David W.; and Quirke, Patric C., to Semian, David W. Adjustable pressure switch. 4,453,052, Cl. 200-85.00R.

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Gribanov, Dmitry D.; Kulesh, Vladimir P.; Martynov, Appolinary K.; Orlov, Anatoly A.; Semikova, Tatyana G.; Fonov, Sergei D.; and Moskalik, Leonid M., 4,452,534, Cl. 356-359.000.

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Seppi, Edward J., to Varian Associates, Inc. Measurement of velocity and tissue temperature by ultrasound. 4,452,081, Cl. 73-597.000.

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Sickler, Jack R. Stud gripper and accessories. 4,452,336, Cl. 182-82.000.
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Peche, Gerhard; and Bialkowski, Gunter, 4,453,054, Cl. 200-144.00B.
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Gandy, James, 4,452,000, Cl. 40-574.000.
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Sperinde, Johnie M.; Goldring, Stanley D.; and Miller, Dean T., to Oximetrix, Inc. Signal filter method and apparatus. 4,453,218, Cl. 364-416.000.
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Ciomo, George C., 4,452,724, Cl. 260-429.00R.

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Stephens, Barry D.; and Morehead, Peter B., to Energy Absorption Systems, Inc. Restorable fender panel. 4,452,431, Cl. 256-13.100.

Stereo Optical Company, Inc.: *See—*
Lewis, Walter M., 4,452,515, Cl. 351-243.000.

Sterling Drug Inc.: *See—*
Bell, Malcolm R., 4,452,988, Cl. 548-369.000.
Gray, James R., 4,451,941, Cl. 4-228.000.
Philion, Richard E., 4,452,816, Cl. 424-330.000.

Sterriker, James; and Schlechter, George, to Industrial Louvers, Inc. Water penetration preventing louver. 4,452,024, Cl. 52-473.000.

Stevens, Bradley D.: *See—*
McCullough, Thomas W.; and Stevens, Bradley D., 4,452,751, Cl. 264-45.500.

Stewart, David G.: *See—*
Ball, William J.; and Stewart, David G., 4,452,907, Cl. 502-60.000.
Ball, William J.; and Stewart, David G., 4,452,908, Cl. 502-61.000.

Stewart, Donald R.: *See—*
Powers, Edward J.; Walsh, Thomas E.; and Stewart, Donald R., 4,452,929, Cl. 523-403.000.

Stobb, Inc.: *See—*
Stobb, Walter J., 4,451,967, Cl. 29-564.300.

Stobb, Walter J., to Stobb, Inc. Crane system sheet feeder method and apparatus. 4,451,967, Cl. 29-564.300.

Stole, Donald M. Security device. 4,452,476, Cl. 292-150.000.

Stoll, Kurt. Actuator. 4,452,128, Cl. 92-163.000.

Stone, Thomas R.; and Penzotti, Roger P., to Paccar Inc. Suspension for a truck tilt cab. 4,452,329, Cl. 180-89.150.

Stoyanov, Stoyan B.: *See—*
Kolev, Kolyo T.; Peeva, Lilly B.; Djakov, Assen E.; Yankov, Rossen A.; Amov, Blagoy G.; and Stoyanov, Stoyan B., 4,452,827, Cl. 427-38.000.

Straehle, Wolfgang: *See—*
Marx, Matthias; and Straehle, Wolfgang, 4,452,997, Cl. 560-200.000.

Straight, Paul E.: *See—*
Johnson, Ewing A.; and Straight, Paul E., 4,453,122, Cl. 323-300.000.

Strand, Rolf L.: *See—*
Krafthefer, Brian C.; and Strand, Rolf L., 4,452,417, Cl. 248-604.000.

Stratus Computer, Inc.: *See—*
Reid, Robert, 4,453,215, Cl. 364-200.000.

Streibert, Hans-Peter: *See—*
Farooq, Saleem; and Streibert, Hans-Peter, 4,452,795, Cl. 424-246.000.

Streich, Georg; Harbauer, Werner; and Bauer, Johann, to Siemens Aktiengesellschaft. Contact arrangement for electric switchgear. 4,453,057, Cl. 200-243.000.

Strickland, John J.: *See—*
DeMoully, Thomas R.; Rockey, Robert E.; and Strickland, John J., 4,452,869, Cl. 429-94.000.

Strindberg, Leif J. E.: *See—*
Bloch, Einer; and Strindberg, Leif J. E., 4,452,475, Cl. 292-31.000.

Stroz, John J.: *See—*
D'Amelia, Ronald P.; Stroz, John J.; and Kachikian, Rouben, 4,452,820, Cl. 426-3.000.

Studt, William L.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,452,980, Cl. 544-211.000.

Stukenborg, James L., to General Motors Corporation. Brake shoe and lining assembly. 4,452,346, Cl. 188-250.00G.

Stumpf, Walter, to Simmons U.S.A. Corporation. Pocketed spring assembly. 4,451,946, Cl. 5-477.000.

Stupp, Edward H.; Fellows, Mark W.; Steneck, Walter G.; and Spataro, Vincent J., to North American Philips Corporation. Magnetic transformer switch and combination thereof with a discharge lamp. 4,453,109, Cl. 315-219.000.

Suami, Tetsuo. Nitrosourea derivatives. 4,452,814, Cl. 424-322.000.

Sugawara, Masaaki: *See—*
Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Sugawara, Masaaki, 4,452,635, Cl. 106-74.000.

Sugimori, Masahiro: *See—*
Kishida, Kazuo; Hasegawa, Akira; and Sugimori, Masahiro, 4,452,941, Cl. 525-66.000.

Sugimoto, Kenichi: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Sugimoto, Kenichi; and Tanabe, Yoshimitsu, 4,453,009, Cl. 568-316.000.

Sugimura, Nobuyuki. Safety device for an accumulator. 4,452,275, Cl. 138-30.000.

Sugita, Yutaka: *See—*
Kodama, Naoki; Suzuki, Ryo; Takeshita, Masatoshi; and Sugita, Yutaka, 4,453,231, Cl. 365-36.000.

Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryuzo; Yusa, Yasuhiro; and Yoshihara, Kenji, to Victor Company of Japan, Ltd. Apparatus for detecting position of a reproducing transducer in a rotary recording medium reproducing apparatus. 4,453,245, Cl. 369-230.000.

Suhara, Yasuji: *See—*
Takemoto, Kenji; Miyasaka, Yumiko; Ishitsuka, Hideo; Suhara, Yasuji; and Maruyama, Hiromi, 4,452,782, Cl. 424-177.000.

Suica, David E.: *See—*
Thiel, Albert E.; and Suica, David E., 4,452,547, Cl. 403-370.000.

Sukolics, Ronald D., to Carl Dunmon & Associates, Inc. Method for joining wall panels. 4,452,029, Cl. 52-747.000.

Sullivan, Philip W.: *See—*
Farrow, Robin F. C.; Jones, Gordon R.; and Sullivan, Philip W., 4,453,172, Cl. 357-23.150.

Sullivan, Vinson D.: *See—*
Speegle, Steven C.; Vinzant, Michael B.; and Sullivan, Vinson D., 4,452,311, Cl. 166-324.000.

Sullivan, William C.; and Nimberger, Spencer M., to Rockwell International Corporation. Differential speed limiting device. 4,452,100, Cl. 74-711.000.

Sulzbach, Hans-Michael: *See—*
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,452,917, Cl. 521-50.000.

Sulzer Morat GmbH: *See—*
Egbers, Gerhard; Schuler, Bernhard; Seidel, Adolf; and Buhler, Gunter, 4,452,053, Cl. 66-123.000.

Sumida, Norio: *See—*
Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, 4,452,634, Cl. 75-93.00R.

Sumino, Yasuhiro: *See—*
Sonoi, Koji; Sumino, Yasuhiro; and Doi, Muneharu, 4,452,889, Cl. 435-88.000.

Sumita, Yo, to Pilot Precision Kabushiki Kaisha. Mechanical pencil with automatic lead feed. 4,452,544, Cl. 401-53.000.

Sumitomo Chemical Company, Limited: *See—*
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,452,981, Cl. 544-236.000.
Yamatsuta, Kohji; and Nishio, Ken-ichi, 4,452,865, Cl. 428-614.000.

Sumitomo Durez Company, Ltd.: *See—*
Matsushima, Noriaki; Saeki, Yukio; and Kirabayashi, Hajime, 4,452,926, Cl. 523-145.000.
Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, 4,452,927, Cl. 523-147.000.

Sumitomo Electric Industries, Ltd.: *See—*
Takano, Satoshi, 4,452,673, Cl. 204-29.000.
Ueno, Keiji, 4,452,838, Cl. 428-36.000.

Sun Dengyosha Company, Limited: *See—*
Fukushima, Toshitsugu, 4,453,059, Cl. 200-296.000.

Suncor, Inc.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,452,900, Cl. 436-72.000.

Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Chromans including heterocyclic substituent. 4,452,801, Cl. 424-263.000.

Sunkel, Manfred, to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft. Tubular window drive mechanism particularly for motor vehicles. 4,452,097, Cl. 74-501.00R.

Suovaniemi, Osmo A.; Ekholm, Pertti; Jarnefelt, Johan; Kaukanen, Esko; and Partanen, Paul, to Labsystems Oy. Method and equipment for the measurement of properties of a liquid. 4,452,902, Cl. 436-517.000.

Supertex, Inc.: *See—*
Chao, Robert L., 4,453,235, Cl. 365-189.000.
Survival Technology, Inc.: *See—*
Sarnoff, Stanley J.; Tarello, William R.; Lopez, Claudio; and Malooley, Rudolph S., 4,452,241, Cl. 128-204.180.
Suverison, Lyle B.: *See—*
Gladd, Joseph H.; Plyler, Robert G.; and Suverison, Lyle B., 4,452,501, Cl. 339-91.00R.
Suzukawa, Yuichi; Kobayashi, Waichi; Okabayashi, Shigeo; and Ichinose, Hidefumi, to Ube Industries, Ltd. Expansive cement additive and cementitious material added therewith. 4,452,637, Cl. 106-89.000.
Suzuki, Akihiko: *See—*
Seino, Minoru; Yamazaki, Atsuo; Aoki, Toru; and Suzuki, Akihiko, 4,452,880, Cl. 430-309.000.
Suzuki, Akira; Shioya, Yasumi; and Kimura, Keiichi, to Shinryo Air Conditioning Co., Ltd. Method of improving the SVI of mixed liquor in aeration tank. 4,452,699, Cl. 210-608.000.
Suzuki, Hideo: *See—*
Kano, Hisae; Suzuki, Hideo; and Nakao, Hideo, 4,452,483, Cl. 296-213.000.
Suzuki Jidoaha Kogyo Kabushiki Kaisha: *See—*
Yokoyama, Hiroshi; and Ishida, Tokuzi, 4,452,218, Cl. 123-579.000.
Suzuki, Masao: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi, 4,453,003, Cl. 562-448.000.
Suzuki, Michio; Terada, Matsuaki; Kato, Takao; and Toki, Ryuichi, to Hitachi, Ltd. Speech packet switching method and device. 4,453,247, Cl. 370-94.000.
Suzuki, Ryo: *See—*
Kodama, Naoki; Suzuki, Ryo; Takeshita, Masatoshi; and Sugita, Yutaka, 4,453,231, Cl. 365-36.000.
Suzuki, Ryoichi: *See—*
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, 4,452,522, Cl. 354-289.120.
Suzuki, Taihei; and Inoue, Kensuke, to Hitachi, Ltd. Multiprocessor information processing system having fault detection function based on periodic supervision of updated fault supervising codes. 4,453,210, Cl. 364-200.000.
Svenska Rotormaskiner AB: *See—*
Schibbye, (Lars) Lauritz B.; and Johansson, Jan, 4,452,575, Cl. 418-1.000.
Swafford, John H., to Georgia-Pacific Corporation. Aminoplast resin compositions. 4,452,934, Cl. 524-243.000.
Swanson, Guy J. Straw and debris deflector for soil opening apparatus. 4,452,315, Cl. 172-29.000.
Swanson, Harold V.: *See—*
Thompson, Duncan M.; and Swanson, Harold V., 4,452,175, Cl. 119-14.030.
Sweetana, Andrew S., Jr.: *See—*
Carlson, William G.; Gupta, Tapan K.; and Sweetana, Andrew S., Jr., 4,452,728, Cl. 252-518.000.
Carlson, William G.; Gupta, Tapan K.; and Sweetana, Andrew S., Jr., 4,452,729, Cl. 252-518.000.
Syntex (U.S.A.) Inc.: *See—*
Kent, John S., 4,452,775, Cl. 424-19.000.
Szeher, Laszlo: *See—*
Balogh, Akos; and Szeher, Laszlo, 4,452,548, Cl. 405-52.000.
Tabachnick, Wayne. Eyeglass holder. 4,452,354, Cl. 206-5.000.
Tabuchi, Kenji; and Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Magnetic brush developing apparatus. 4,452,173, Cl. 118-652.000.
Taenzer, Jon C., to SRI International. Inherent delay line ultrasonic transducer and systems. 4,452,084, Cl. 73-609.000.
Taggart, Gerald B.: *See—*
John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., 4,452,152, Cl. 110-235.000.
Tahara, Susumu; Fujii, Kozo; Nishihira, Keig; Matsuda, Masaoki; and Mizutare, Katsuhiko, to Ube Industries, Ltd. Process for continuously preparing ethylene glycol. 4,453,026, Cl. 568-864.000.
Tai, Ho T.; Reed, David A.; Verhoef, Nicolaas J. F. D.; and Deutscher, Fritz, to Lever Brothers Company. Built liquid detergent compositions and method of preparation. 4,452,717, Cl. 252-109.000.
Taiho Kogyo Co., Ltd.: *See—*
Kamiya, Soji; and Muraki, Takeshi, 4,452,866, Cl. 428-653.000.
Taiho Pharmaceutical Company Limited: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,452,813, Cl. 424-303.000.
Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, to Teijin Limited. Method of manufacturing a cut pile carpet. 4,452,160, Cl. 112-410.000.
Takabayashi, Katsuyuki: *See—*
Nagasawa, Takeshi; Kuroiwa, Katsumasa; Takabayashi, Katsuyuki; and Nakamura, Yoshio, 4,452,736, Cl. 260-112.50R.
Takahashi, Hideaki: *See—*
Yokoshima, Minoru; Nawata, Kazuyoshi; Hironaka, Tetsuo; and Takahashi, Hideaki, 4,452,996, Cl. 560-185.000.
Takahashi, Mokoto: *See—*
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Takahashi, Mokoto, 4,452,931, Cl. 524-100.000.
Takai, Kazuki, to Clarion Co., Ltd. Braking system for a tape player. 4,452,409, Cl. 242-204.000.
Takai, Kiyoshi: *See—*
Noshi, Yoshibumi; Naito, Hiroyuki; Takai, Kiyoshi; and Sugawara, Masaaki, 4,452,635, Cl. 106-74.000.
Takano, Satoshi, to Sumitomo Electric Industries, Ltd. Pretreatment baths for silver plating. 4,452,673, Cl. 204-29.000.
Takano, Takao: *See—*
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.
Takao, Shoji: *See—*
Yamazaki, Ken-ichi; Takao, Shoji; and Hara, Hiroshi, 4,452,888, Cl. 435-69.000.
Takara Shuzo Co., Ltd.: *See—*
Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, 4,452,897, Cl. 435-280.000.
Takase, Hiroshi, to Olympus Optical Co., Ltd. Wide angle zoom lens system. 4,452,512, Cl. 350-426.000.
Takase, Muneaki: *See—*
Mitsuhashi, Hiroshi; Mizuno, Den-ichi; Hayashi, Koji; Abe, Shigeru; Takase, Muneaki; and Narita, Toshiharu, 4,452,786, Cl. 424-182.000.
Takase, Sadao, to Nissan Motor Co., Ltd. Fuel supply control system for an internal combustion engine. 4,452,212, Cl. 123-493.000.
Takasu, Yasuhito; Hosoe, Katsuharu; and Iwata, Toshiharu, to Nippondenso Co., Ltd. Method and apparatus for controlling ignition timing in an internal combustion engine. 4,452,205, Cl. 123-419.000.
Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,452,851, Cl. 424-246.000.
Takata, Yoshinori; Miyagi, Hiroyuki; Hirota, Kunio; Shibata, Yasuhisa; Nidaira, Kazuo; and Shirato, Fusao, to Hitachi, Ltd. Apparatus for measuring clinical emergency check items of blood. 4,452,682, Cl. 204-403.000.
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,452,851, Cl. 424-246.000.
Take, Katsuo; and Tamura, Tsutomu, to Toyo Boseki Kabushiki Kaisha. Production of plated shaped product of polyamide. 4,452,858, Cl. 428-331.000.
Takeda Chemical Industries, Ltd.: *See—*
Sonoi, Koji; Sumino, Yasuhiro; and Doi, Muneharu, 4,452,889, Cl. 435-88.000.
Takekawa, Hiroshi, to Olympus Optical Company Limited. Immunological agglutination pattern detection device. 4,452,759, Cl. 422-73.000.
Takemoto, Kenji; Miyasaka, Yumiko; Ishitsuka, Hideo; Suhara, Yasuji; and Maruyama, Hiromi, to Hoffmann-La Roche Inc. Pentadecapeptide. 4,452,782, Cl. 424-177.000.
Takenaka Komuten Co., Ltd.: *See—*
Ikuo, Yamaguchi; Yasuo, Higashibata; Masaru, Fujimura; Toshio, Nagashima; and Shunsuke, Sugano, 4,452,019, Cl. 52-167.000.
Takeshita, Masatoshi: *See—*
Kodama, Naoki; Suzuki, Ryo; Takeshita, Masatoshi; and Sugita, Yutaka, 4,453,231, Cl. 365-36.000.
Takeuchi, Shin; and Onodera, Kenji, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Small-sized printer. 4,452,137, Cl. 101-93.220.
Takeuchi, Yasuhiro: *See—*
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,452,187, Cl. 123-90.160.
Takizawa, Masaaki: *See—*
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.
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Takizawa, Masahiro; Kawakami, Yoshio; and Kajimoto, Noribumi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,452,863, Cl. 428-423.100.
Tamura, Masaru: *See—*
Kosuda, Tooru; Katou, Hiromi; Takizawa, Masaaki; Tamura, Masaru; Matsubara, Noboru; and Hiyoshi, Tsutomu, 4,452,188, Cl. 123-90.180.
Tamura, Ryutaro. Capacitance type switch having dust-free interior. 4,453,061, Cl. 200-306.000.
Tamura, Toshiaki; Otani, Yoshiaki; Otake, Hiroshi; and Yamamura, Masami, to Matsushita Electric Industrial Co., Ltd. LC Composite component. 4,453,144, Cl. 333-140.000.
Tamura, Tsutomu: *See—*
Take, Katsuo; and Tamura, Tsutomu, 4,452,858, Cl. 428-331.000.
Tanabe, Osamu: *See—*
Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, 4,452,897, Cl. 435-280.000.
Tanabe, Yoshimitsu: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Sugimoto, Kenichi; and Tanabe, Yoshimitsu, 4,453,009, Cl. 568-316.000.
Tanahashi, Toru, to Mitsubishi Denki Kabushiki Kaisha. Load change responsive elevator speed control apparatus. 4,452,341, Cl. 187-29.00R.
Tanaka, Kunio: *See—*
Fujita, Takayuki; Yoshida, Yoshiaki; Higashiura, Toshiyuki; and Tanaka, Kunio, 4,451,976, Cl. 29-740.000.
Tanaka, Naoki; and Sasaki, Masatake, to Sony Corporation. Linear tracking arm drive apparatus. 4,453,243, Cl. 369-221.000.

Tanaka, Sumio: *See*—
Kawasaki, Yuichi; Tanaka, Sumio; Iwahashi, Hiroshi; Asano, Masamichi; Maekawa, Shinichi; and Mito, Masazi, 4,453,174, Cl. 357-41.000.
Tanaka, Tsuneo: *See*—
Haga, Kyosuke; and Tanaka, Tsuneo, 4,452,274, Cl. 137-625.220.
Tang, Man-Chung; and Tang, Yee-Yun, to Dyckerhoff & Widmann Aktiengesellschaft. Air inflated bubble roof. 4,452,017, Cl. 52-2.000.
Tang, Yee-Yun: *See*—
Tang, Man-Chung; and Tang, Yee-Yun, 4,452,017, Cl. 52-2.000.
Taniguchi, Yoshitomo: *See*—
Ogino, Saburo; Taniguchi, Yoshitomo; and Kiyoshima, Satoshi, 4,452,266, Cl. 137-15.100.
Tanimoto, Akira, to Sharp Kabushiki Kaisha. Electronic musical instrument with musical information input means. 4,452,119, Cl. 84-1.030.
Tapio, Olli: *See*—
Koski, Erkki; and Tapio, Olli, 4,452,669, Cl. 162-305.000.
Tarello, William R.: *See*—
Sarnoff, Stanley J.; Tarello, William R.; Lopez, Claudio; and Malooley, Rudolph S., 4,452,241, Cl. 128-204.180.
Tartaglia, John A. Tool having articulated opposing jaws. 4,452,106, Cl. 81-43.000.
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, to Matsushita Electronics Corporation. Method for manufacturing a plastic encapsulated semiconductor device and a lead frame therefor. 4,451,973, Cl. 29-588.000.
Taube, David, to USV Pharmaceutical Corporation. Method for increasing the purity of amphoteric compound compositions. 4,453,007, Cl. 562-554.000.
Tay-Lodge, John F.; and Proudlock, Bernard L. Induction regulator for an internal combustion engine. 4,452,219, Cl. 123-591.000.
Taylor, Benson T., Jr.; and Hawkins, Ralph G., to General Electric Company. Microwave oven door aligning assembly. 4,453,065, Cl. 219-10.55D.
Taylor, Glenn N.: *See*—
Peterson, James J.; and Taylor, Glenn N., 4,452,253, Cl. 128-766.000.
Taylor, James E.: *See*—
Dahlgren, Harold P.; Taylor, James E.; and Peters, Dwight W., 4,452,139, Cl. 101-148.000.
Taylor, Scott R.: *See*—
John, Floyd C.; Taylor, Scott R.; and Taggart, Gerald B., 4,452,152, Cl. 110-235.000.
TDK Electronics Co., Ltd.: *See*—
Kitahra, Yoshimi; Fukuda, Kazumasa; and Maruta, Fumio, 4,452,864, Cl. 428-611.000.
Takizawa, Masahiro; Kawakami, Yoshio; and Kajimoto, Noribumi, 4,452,863, Cl. 428-423.100.
Tech Nomadic Corporation: *See*—
Rait, Joseph M.; and Dhanens, David, 4,453,154, Cl. 340-970.000.
Techno-Chemi Kessler & Co. GmbH: *See*—
Wendler, Manfred; Marcinkowski, Jurgen; and Brehm, Jurgen, 4,452,661, Cl. 156-428.000.
Teetz, Wolfgang; Slomma, Heinz-Georg; and Ripkens, Hans-Gerd, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Variable thread tensioner for embroidery machines. 4,452,156, Cl. 112-97.000.
Teijin Limited: *See*—
Harada, Toshiaki; Hiramatsu, Toshiyuki; and Yamaji, Teizo, 4,452,720, Cl. 252-301.160.
Tajiri, Koji; Oohara, Mikio; and Maruo, Kiyoshi, 4,452,160, Cl. 112-410.000.
Telecommunications Radioelectriques et Telephoniques: *See*—
Ferrieu, Gilbert M. M., 4,453,039, Cl. 179-81.00B.
Telectronics Pty. Ltd.: *See*—
Money, David K.; and Daly, Christopher N., 4,453,162, Cl. 340-870.390.
Teledyne Industries, Inc.: *See*—
Kerr, Ronald R., 4,452,238, Cl. 128-66.000.
Telefunken Electronic GmbH: *See*—
Minner, Willy, 4,452,220, Cl. 123-644.000.
Telezhnikov, Jury F.: *See*—
Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.
Tempas, Robert J.: *See*—
Wood, Ronald L., Jr.; and Tempas, Robert J., 4,452,498, Cl. 312-216.000.
Temple, Davis L., Jr.; and Yevich, Joseph P., to Mead Johnson & Company. Benzisothiazole and benzisoxazole piperazine derivatives. 4,452,799, Cl. 424-250.000.
Templeton, Michael S., to Templeton, Wayne K. Display device. 4,452,416, Cl. 248-447.200.
Templeton, Wayne K.: *See*—
Templeton, Michael S., 4,452,416, Cl. 248-447.200.
Terachi, Junichi: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; and Yoshiyasu, Hajimu, 4,453,053, Cl. 200-144.00R.
Terada, Matsuaki: *See*—
Suzuki, Michio; Terada, Matsuaki; Kato, Takao; and Toki, Ryuichi, 4,453,247, Cl. 370-94.000.
Terai, Akio; Miyauchigo, Takashi; and Ota, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Gripping device with interdigitating, articulate fingers. 4,452,479, Cl. 294-88.000.
Terry, Michael B., to Mostek Corporation. Loop length compensation circuit. 4,453,037, Cl. 179-16.00F.
Terumo Corporation: *See*—
Yamazaki, Ken-ichi; Takao, Shoji; and Hara, Hiroshi, 4,452,888, Cl. 435-69.000.
Terumo Kabushiki Kaisha: *See*—
Hanzawa, Yoshiki; and Soma, Takahiro, 4,452,273, Cl. 137-486.000.
Texaco Inc.: *See*—
Haskin, Helen K.; and Figdore, Phillip E., 4,452,308, Cl. 166-274.000.
Speranza, George P.; and Zimmerman, Robert L., 4,452,922, Cl. 521-137.000.
Widmyer, Richard H., 4,452,309, Cl. 166-303.000.
Texas Instruments Incorporated: *See*—
Jensen, Millard; and Levine, Jules D., 4,451,968, Cl. 29-572.000.
Richardson, Donald C., 4,453,258, Cl. 375-98.000.
Textilma AG: *See*—
Speich, Francisco, 4,452,281, Cl. 139-76.000.
Textron, Inc.: *See*—
Fealey, William S., 4,452,388, Cl. 227-132.000.
Th. Goldschmidt AG: *See*—
Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Schamberg, Eckehard, 4,452,961, Cl. 528-26.000.
Theiling, Louis F., Jr.: *See*—
McCain, James H.; and Theiling, Louis F., Jr., 4,453,022, Cl. 568-618.000.
McCain, James H.; and Theiling, Louis F., Jr., 4,453,023, Cl. 568-618.000.
Theissig, Werner: *See*—
Rumpp, Gerhard; and Theissig, Werner, 4,453,032, Cl. 174-46.000.
Thermocell Development, Ltd.: *See*—
Smith, Stuart B., 4,452,829, Cl. 427-209.000.
Thermon Manufacturing Company: *See*—
Huff, Greg; and Gardner, John, 4,453,159, Cl. 340-590.000.
Thiel, Albert E.; and Suica, David E., to Emerson Electric Co. Means detachably mounting a speed reducing mechanism on a shaft to be driven. 4,452,547, Cl. 403-370.000.
Thomas, Norman W.: *See*—
Collins, George L.; and Thomas, Norman W., 4,452,601, Cl. 8-115.500.
Thompson, Arthur M. Speaker mounting bracket. 4,453,047, Cl. 179-146.00R.
Thompson, Duncan M.; and Swanson, Harold V., to Babson Bros. Co. Post assembly for a parlor stall. 4,452,175, Cl. 119-14.030.
Thompson, Johnnie W. Knee joint apparatus for a leg prosthesis. 4,451,939, Cl. 3-23.000.
Thomson-CSF: *See*—
Berger, Jean L.; and Descure, Pierrick, 4,453,177, Cl. 358-44.000.
Lange, Francois; and Rascle, Roger, 4,452,748, Cl. 264-25.000.
Ravel, Paul, 4,453,223, Cl. 364-517.000.
Thorkildson, Robert J.: *See*—
Trcka, James S.; and Thorkildson, Robert J., 4,453,200, Cl. 362-31.000.
Throckmorton, Morford C., to Goodyear Tire & Rubber Company, The. Process for nonaqueous dispersion polymerization of butadiene in the presence of polymeric dispersing agents. 4,452,960, Cl. 526-201.000.
Tiller, Charles R., to Cooper Industries, Inc. Acoustic tachometer. 4,452,079, Cl. 73-488.000.
Timander, C. Carl: *See*—
Timander, Karl O.; and Johansson, Ulf O., 4,452,458, Cl. 273-310.000.
Timander, Karl O.; and Johansson, Ulf O., to Timander, C. Carl, a part interest. Device to determine, indicate and record aim of object. 4,452,458, Cl. 273-310.000.
Timmer, Frans F., to Intervention, Ltd. Apparatus for stringing a racket frame. 4,452,452, Cl. 273-73.00A.
Titanium Metals Corporation of America: *See*—
Alexander, Jesse A., 4,452,112, Cl. 82-47.000.
Titeflex Corporation: *See*—
Atwell, William J., 4,452,279, Cl. 138-126.000.
Toda, Minoru, to RCA Corporation. Surface acoustic wave cutterhead for disc recording having a circular transducer. 4,453,242, Cl. 369-132.000.
Tofle Kabushiki Kaisha: *See*—
Misumida, Yoshiro, 4,452,224, Cl. 126-41.00R.
Toho Tekko Co., Ltd.: *See*—
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Toki, Ryuichi: *See*—
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Hoshimi, Susumu; and Kojima, Tadashi, 4,453,250, Cl. 371-40.000.
Inagawa, Jun; Nagumo, Masahide; and Kojima, Tadashi, 4,453,260, Cl. 375-116.000.
Kawasaki, Yuichi; Tanaka, Sumio; Iwahashi, Hiroshi; Asano, Masamichi; Maekawa, Shinichi; and Mito, Masazi, 4,453,174, Cl. 357-41.000.
Ogura, Tomoki, 4,452,525, Cl. 355-14.00R.

Shinozaki, Satoshi, 4,453,233, Cl. 365-182.000.
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Tokyo Shibaura Electric Co., Ltd.: *See*—
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Tolgyesi, Eva: *See*—
Bresak, Ann F.; and Tolgyesi, Eva, 4,452,261, Cl. 132-7.000.
Tolliver, Wilbur E. Spacer for wire reinforcement in concrete structures such as pipe. 4,452,026, Cl. 52-684.000.
Tomczak, Lawrence W.: *See*—
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Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., to Vsesojuzny Nauchno-Issledovatelsky Institut Nerudnykh Stroitelnykh Materialov I/Gidromekhanizatsii. Acidproof lining material. 4,452,946, Cl. 524-541.000.
Tomov, Mitko. Pneumatic drive. 4,452,126, Cl. 92-6.00R.
Tomshack, Jonathon: *See*—
Domini, Jack R.; and Tomshack, Jonathon, 4,453,270, Cl. 383-115.000.
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; and Okazaki, Mari, to Toyota Jidosha Kogyo Kabushiki Kaisha. Leanness sensor. 4,452,687, Cl. 204-428.000.
Toro Company, The: *See*—
Larsen, Glenn L.; and Patrin, Jerold F., 4,452,185, Cl. 123-41.580.
Toshio, Nagashima: *See*—
Ikuo, Yamaguchi; Yasuo, Higashibata; Masaru, Fujimura; Toshio, Nagashima; and Shunsuke, Sugano, 4,452,019, Cl. 52-167.000.
Toth, John E.: *See*—
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Towmotor Corporation: *See*—
Ping, David T.; Reeve, Edwin; and Webber, Philip S., 4,452,332, Cl. 180-312.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Take, Katsuo; and Tamura, Tsutomu, 4,452,858, Cl. 428-331.000.
Toyo Kogyo Co., Ltd.: *See*—
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Toyoda Koki Kabushiki Kaisha: *See*—
Haga, Kyosuke; and Tanaka, Tsuneo, 4,452,274, Cl. 137-625.220.
Toyoda, Munemitsu; and Adachi, Koichiro, to Sharp Kabushiki Kaisha. Enameled metal turntable in a combination microwave and electric oven. 4,453,064, Cl. 219-10.55F.
Toyota Jidosha Kabushiki Kaisha: *See*—
Kobashi, Kiyoshi, 4,452,040, Cl. 60-274.000.
Oshika, Sumio; Kinoshita, Takahiko; Kakeno, Nobuhiko; Miura, Nobuhiro; Kato, Kiyoshi; Kuwakado, Satosi; and Kondo, Yasuo, 4,452,203, Cl. 123-403.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi; Hanaoka, Masanori; Hashiguchi, Yukihide; Ootsuka, Yoshinori; and Yamaguchi, Hiroaki, 4,452,069, Cl. 73-35.000.
Iwamoto, Kenzi; Kawai, Hisasi; Matuhiro, Ryuichi; Moriguchi, Koichi; Mizuno, Nobutaka; and Ikuta, Yasuhiro, 4,452,044, Cl. 60-600.000.
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,452,187, Cl. 123-90.160.
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; Furutani, Toshinobu; and Okazaki, Mari, 4,452,687, Cl. 204-428.000.
TRAK Sportartikel GmbH: *See*—
Hetzelt, Stephan; and Pichler, Oswald, 4,452,467, Cl. 280-615.000.
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Christ, Richard; Wegner, Klaus; and Kroll, Hartmut, 4,453,081, Cl. 250-506.100.
Trapanese, Salvatore P.: *See*—
Finch, Harvey E.; and Trapanese, Salvatore P., 4,452,744, Cl. 260-412.200.
Trassl, Werner, to Kraftwerk Union. Electrohydraulic actuating drive for valves. 4,452,422, Cl. 251-25.000.
Travis, George W., to Bell Telephone Laboratories, Incorporated. Active predistorter for linearity compensation. 4,453,133, Cl. 330-149.000.
Travnitskaya, Svetlana M.: *See*—
Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., 4,452,946, Cl. 524-541.000.
Traxler, James T., to Velsicol Chemical Corporation. Acridine substituted phosphorus compounds and their insecticidal use. 4,452,792, Cl. 424-200.000.
Trcka, James S.; and Thorkildson, Robert J., to Rockwell International Corporation. Apparatus for lighting a passive display. 4,453,200, Cl. 362-31.000.
Treby, John M.; and Roberts, Derek A., to Rolls-Royce Limited. Rotor drive systems. 4,452,567, Cl. 416-2.000.
Tregoning, Geoffrey R., to Westinghouse Brake and Signal Company Ltd. Road brake slack adjuster. 4,452,343, Cl. 188-79.50K.
Trell, Erik Y. Model of Baryon states and a device of producing such models. 4,452,590, Cl. 434-281.000.
Tri-State Oil Tool Industries: *See*—
Barrier, Frank W.; and Winterrowd, Kenneth W., 4,452,304, Cl. 166-70.000.
Trickes, Georg: *See*—
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Hanssen, Stan B.; and Hanssen, James R., 4,452,326, Cl. 177-256.000.
Trinity Associates: *See*—
Christine, William C., 4,452,378, Cl. 222-107.000.
Trischman, Charles A.; Weissberger, Paula S.; and Steinert, Robert B., to El Paso Polyolefins Company. Additive-containing polyolefin beads and process for their preparation. 4,452,928, Cl. 523-206.000.
TriSolar Corp.: *See*—
Matlin, Ronald W.; Millner, Alan R.; and Sarles, Frederick W., 4,452,045, Cl. 60-641.800.
Troll, Dennis G.: *See*—
Dyett, Derek H.; Troll, Dennis G.; and Horsley, John K., 4,452,172, Cl. 118-203.000.
Trombe, Felix: *See*—
Berger, Raymond; de Cachard, Maurice; Gouzy, Andre ; and Trombe, Felix, 4,452,051, Cl. 62-467.000.
Trombettas, David T. Grill-type window gate apparatus. 4,452,011, Cl. 49-56.000.
TRW Inc.: *See*—
Miller, Chauncey S., 4,453,259, Cl. 375-106.000.
Rau, Jim L., 4,452,041, Cl. 60-384.000.
Tsai, Lung-Wen, to General Motors Corporation. Cyclic phase change coupling. 4,452,592, Cl. 464-102.000.
Tscheplak, Ernst, to Daimler-Benz Aktiengesellschaft. Clutch wear measurement device. 4,452,349, Cl. 192-30.00W.
Tsentralnoe Proektnokonstruktorskoe I Tekhnologicheskoe Bjuro Glavsantekhprom: *See*—
Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., 4,452,295, Cl. 164-186.000.
Tsuchida, Takayasu; Miwa, Kiyoshi; and Nakamori, Shigeru, to Ajinomoto Company Incorporated. Method of producing L-threonine by fermentation. 4,452,890, Cl. 435-115.000.
Tsuchikane, Yoshiyuki; and Kasuga, Masao, to Victor Company of Japan, Ltd. Characteristic control system for a digital equalizer. 4,453,255, Cl. 375-14.000.
Tsuji, Masahiro: *See*—
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Tsutsumi, Kazumichi; and Matsuura, Masahiko, to Mitsubishi Denki Kabushiki Kaisha; and Toyo Kogyo Co., Ltd. Control device for internal combustion engine. 4,452,200, Cl. 123-339.000.
Tucker, Raymond M.; and Dyer, Clarence L., to Rangaire Corporation. Induction cook-top system and control. 4,453,068, Cl. 219-10.770.
Tung, William C. T., to Goodyear Tire & Rubber Company, The. Random elastomeric copolyesters. 4,452,965, Cl. 528-173.000.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., to International Telephone and Telegraph Corporation. Suspensions containing microfibrillated cellulose. 4,452,721, Cl. 252-310.000.
Turbak, Albin F.; Snyder, Fred W.; and Sandberg, Karen R., to International Telephone and Telegraph Corporation. Suspensions containing microfibrillated cellulose. 4,452,722, Cl. 252-311.000.
Turkin, Vladimir Y.: *See*—
Zarogatsky, Leonid P.; Ivanov, Boris G.; Ivanov, Nikolai A.; Mitrofanov, Evgeny S.; Safronov, Andrei N.; Turkin, Vladimir Y.; and Cherkassky, Vladimir A., 4,452,401, Cl. 241-207.000.
Turner, George F. A. M.; and Hammond, Martin G., to Ciba-Geigy AG. Photographic enlarger for use in bright light. 4,452,527, Cl. 355-45.000.
Turutin, Veniamin S.: *See*—
Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.
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Tyler, Derek E.: *See*—
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UBE Industries, Ltd.: *See*—
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Takahashi, Mokoto, 4,452,931, Cl. 524-100.000.
Suzukawa, Yuichi; Kobayashi, Waichi; Okabayashi, Shigeo; and Ichinose, Hidefumi, 4,452,637, Cl. 106-89.000.
Tahara, Susumu; Fujii, Kozo; Nishihira, Keig; Matsuda, Masaoki; and Mizutare, Katsuhiko, 4,453,026, Cl. 568-864.000.

Uchida, Masami: *See*—
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Uchida, Takateru; Noguchi, Kohji; and Kiyota, Takao, to Asahi Kasei Kogyo Kabushiki Kaisha. Totally porous activated gel. 4,452,918, Cl. 521-52.000.
Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Non-volatile semiconductor memory device. 4,453,234, Cl. 365-185.000.
Uchiyama, Takashi: *See*—
Murakami, Hiroyasu; Uchiyama, Takashi; Suzuki, Ryoichi; Sakai, Shinji; Kawamura, Masaharu; and Momiyama, Kikuo, 4,452,522, Cl. 354-289.120.
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Ueda, Arata: *See*—
Oguchi, Yukio; Sumida, Norio; Fujii, Tetsuya; Emi, Toshihiko; Fujimura, Toshio; and Ueda, Arata, 4,452,634, Cl. 75-93.00R.
Ueno, Keiji, to Sumitomo Electric Industries, Ltd. Heat-shrinkable tubes. 4,452,838, Cl. 428-36.000.
Ulmsten, Ulf: *See*—
Mattsson, Soren; Holmer, Nils-Gunnar; Bernstein, Kurt; Ulmsten, Ulf; Astedt, Birger; and Jacobsson, Lars, 4,453,075, Cl. 250-363.00S.
Umeda, Hiroyuki: *See*—
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Umezawa, Hamao; Ohno, Masaji; Kotani, Hirokazu; Miyabe, Toshinori; Obayashi, Akira; and Tanabe, Osamu, to Takara Shuzo Co., Ltd. Method of preparing optically active β-(S)-aminoglutaric acid monoalkyl esters. 4,452,897, Cl. 435-280.000.
Umezawa, Hamao; Aoyagi, Takaaki; Shirai, Tadashi; Nishizawa, Rinzo; Suzuki, Masao; and Saino, Tetsushi. Process for producing threo-3-amino-2-hydroxy-butanoyl-aminoacetic acids as well as novel intermediates therefor and process for producing them. 4,453,003, Cl. 562-448.000.
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Ungarean, Gary L.; Yarwood, John C.; Kindlmann, Peter J.; and Tyler, Derek E., to Olin Corporation. Process and apparatus for selecting the drive frequencies for individual electromagnetic containment inductors. 4,452,297, Cl. 164-467.000.
Union Carbide Corporation: *See*—
Handwerk, Richard H.; Mendelsohn, Alfred; and Haapala, Urho S., 4,452,750, Cl. 264-40.300.
Keogh, Michael J., 4,452,937, Cl. 524-398.000.
Lauria, Anthony T.; and Voisinet, Louis J., 4,453,253, Cl. 373-74.000.
McCain, James H.; and Theiling, Louis F., Jr., 4,453,022, Cl. 568-618.000.
McCain, James H.; and Theiling, Louis F., Jr., 4,453,023, Cl. 568-618.000.
Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., 4,452,956, Cl. 526-64.000.
Rosen, Meyer R., 4,452,940, Cl. 524-801.000.
Vasudevan, Ganapathy, 4,452,835, Cl. 428-35.000.
Union Corporation, The: *See*—
Calabro, Francis C., 4,452,555, Cl. 410-53.000.
Union Oil Company of California: *See*—
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United Catalysts, Inc.: *See*—
Merriam, Jay S.; and Hogg, Cecil B., 4,452,854, Cl. 423-437.000.
United Kingdom Atomic Energy Authority: *See*—
Rosevear, Alan, 4,452,892, Cl. 435-176.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Farrow, Robin F. C.; Jones, Gordon R.; and Sullivan, Philip W., 4,453,172, Cl. 357-23.150.
U.S. Environmental Products, Inc.: *See*—
Roberts, Robert L.; and Janssen, Felix G., 4,452,698, Cl. 210-503.000.
United States Gypsum Company: *See*—
Palmer, Jay W.; and Gaynor, John C., 4,452,770, Cl. 423-167.000.
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Agriculture: *See*—
Shaw, Lawrance N., 4,452,288, Cl. 144-208.00C.
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Rittenbach, Otto E., 4,453,137, Cl. 331-2.000.
Rosati, Vincent J., 4,453,141, Cl. 331-158.000.
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Brynestad, Jorulf; and Bamberger, Carlos E., 4,452,767, Cl. 423-297.000.
Byrne, Martin A.; and Lupinski, John H., 4,452,938, Cl. 524-439.000.
Groh, Edward F.; Olson, Arne P.; Wade, David C.; and Robinson, Bryan W., 4,452,754, Cl. 376-335.000.
Hunt, Arlon J., 4,452,771, Cl. 423-450.000.
Hylton, Charles L., 4,452,755, Cl. 376-364.000.
Leemann, Beat T.; and Yourd, Roland B., 4,453,077, Cl. 250-423.00R.
Loo, Billy W., 4,452,068, Cl. 73-28.000.
Rogers, Samuel C., 4,452,334, Cl. 181-175.000.
Wrenn, George E., Jr.; and Lewis, John, Jr., 4,452,832, Cl. 427-350.000.
National Aeronautics and Space Administration: *See*—
Garner, H. Douglas; and Howell, William E., 4,453,163, Cl. 340-980.000.
von Pragenau, George L., 4,452,412, Cl. 244-172.000.
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Adolph, Horst G., 4,453,021, Cl. 568-590.000.
Cichra, Dorothy A.; Adolph, Horst G.; and Kamlet, Mortimer J., 4,452,739, Cl. 260-239.0BC.
Griffith, James R.; and O'Rear, Jacques G., 4,452,998, Cl. 560-221.000.
Hodgkins, Harry L.; and Reingruber, John K., 4,452,039, Cl. 60-207.000.
Holtrop, John W.; and Bartels, Bruce C., 4,452,123, Cl. 89-1.706.
Miles, Ronald O.; Giallorenzi, Thomas G.; and Tveten, Alan B., 4,452,533, Cl. 356-352.000.
Van Buren, Arnie L., 4,453,238, Cl. 367-13.000.
Wohltjen, Henry; and Giuliani, John F., 4,452,624, Cl. 65-40.000.
U.S. Philips Corporation: *See*—
Beugin, Michel; and Marriere, Jean-Pierre, 4,453,244, Cl. 369-225.000.
Bouwknegt, Jan; Dieleman, Louis F. A.; and Marneffe, Antonius C., 4,452,557, Cl. 414-118.000.
Kelland, Martin J., 4,453,136, Cl. 331-1.00A.
Koel, Gerrit J.; and Kuijk, Karel E., 4,453,232, Cl. 365-41.000.
Le Can, Claude J. P. F.; and Hart, Karel, 4,453,096, Cl. 307-448.000.
Sempel, Adrianus, 4,453,090, Cl. 307-303.000.
van de Veerdonk, Johannes T. A.; and van Alem, Antonius A. M., 4,453,241, Cl. 369-112.000.
United Technologies Corporation: *See*—
Belanger, Homer J.; and Patacca, Angelo M., 4,452,563, Cl. 415-9.000.
Birbara, Philip J.; Galasso, Francis S.; and Veltri, Richard D., 4,452,676, Cl. 204-129.000.
Hobbs, Robert H.; and Solomon, Peter R., 4,453,226, Cl. 364-555.000.
Mathews, Douglas C.; and Peracchio, Aldo A., 4,452,335, Cl. 181-214.000.
Monhardt, Richard J.; Orr, Alfred B.; Premont, Emile J.; and Wright, Joseph B., 4,452,565, Cl. 415-9.000.
Wells, Roger F., 4,452,277, Cl. 138-44.000.
United Vintners, Inc.: *See*—
Shrikhande, Anil J., 4,452,822, Cl. 426-49.000.
University College London: *See*—
Parker, Dawood; and Delpy, David T., 4,452,672, Cl. 204-1.00T.
Untz, Reese E. Tree climbing apparatus. 4,452,338, Cl. 182-187.000.
UOP Inc.: *See*—
Benson, Henry E.; and Koehler, Raymond A., 4,452,656, Cl. 156-174.000.
Upjohn Company, The: *See*—
Johnson, Roy A.; Lin, Chiu-Hong; and Bundy, Gordon L., 4,452,986, Cl. 548-336.000.
Uratani, Munehiro; and Kamuro, Setsufumi, to Sharp Kabushiki Kaisha. Memory array addressing circuitry. 4,453,236, Cl. 365-195.000.
Urayama, Takumi: *See*—
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Urushihara, Koji; Okada, Yoshihito; and Komori, Haruyuki, to Seiko Seiki Kabushiki Kaisha. Mounting structure for compressor for car cooler. 4,452,418, Cl. 248-666.000.
Usher, Francis C. Surgical mesh and method. 4,452,245, Cl. 128-334.00R.
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Valentin, Zapata M. System for the obtaining of energy by fluid flows resembling a natural cyclone or anti-cyclone. 4,452,046, Cl. 60-641.110.
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Cusack, Robert F., 4,451,987, Cl. 33-174.00L.
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Olsen, Ronald H.; and Vandenbergh, Peter A., 4,452,894, Cl. 435-253.000.

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Evans, Robert F.; and Davis, Randy C., 4,452,539, Cl. 384-94.000.

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Berkowitz, Edward H., 4,453,080, Cl. 250-443.100.
Seppi, Edward J., 4,452,081, Cl. 73-597.000.

Varta Batterie Aktiengesellschaft: *See*—
Voss, Heinz-Joachim, 4,452,873, Cl. 429-209.000.

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Lipets, Adolf U.; Nekrasov, Mikhail I.; Fedosov, Alexei Z.; Nikolaev, Vyacheslav P.; Golev, Viktor A.; Kurshin, Nikolai M.; Rozov, Ivan N.; Sotnikov, Ivan A.; Ovchar, Vladimir G.; Popov, Alexandr G.; Vasiliev, Anatoly A.; Postnikov, Alexei D.; Dombrovsky, Vladimir I.; and Evstafiev, Vladimir K., 4,452,181, Cl. 122-1.00A.

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Conant, Ronald G.; and Veasey, Larry T., 4,452,564, Cl. 415-9.000.

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Moos, Niklaus J., 4,452,317, Cl. 172-266.000.

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Ogata, Haruki; Ogawa, Kimio; and Umeda, Hiroyuki, 4,452,407, Cl. 242-198.000.
Sugiyama, Hiroyuki; Sakurai, Masaki; Abe, Ryuzo; Yusa, Yasuhiro; and Yoshihara, Kenji, 4,453,245, Cl. 369-230.000.
Tsuchikane, Yoshiyuki; and Kasuga, Masao, 4,453,255, Cl. 375-14.000.

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Watson, James M.; Butler, James R.; and Victor, Mark, 4,452,975, Cl. 528-493.000.

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Klacik, Kenneth J.; Vink, Walter V.; and Fronczkowski, Paul R., 4,452,825, Cl. 426-658.000.

Vinter, Jeremy G.: *See*—
Batchelor, John F.; Vinter, Jeremy G.; and Hodson, Harold F., 4,452,991, Cl. 549-383.000.

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Speegle, Steven C.; Vinzant, Michael B.; and Sullivan, Vinson D., 4,452,311, Cl. 166-324.000.

Vishnevsky, Valdimir S.; Kartashev, Igor A.; Lavrinenko, Vyacheslav V.; Boichenko, Oleg L.; Koval, Vitaly S.; Golovyashin, Jury V.; Serov, Nikolai F.; Shinkarenko, Leonid I.; and Jurash, Oleg G., to Kievsky Politekhnichesky Institut. Piezoelectric motor. 4,453,103, Cl. 310-323.000.

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Voight, William C. Switching-mode power supply regulator. 4,453,206, Cl. 363-21.000.

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Tomilo, Vladimir M.; Potapov, Stanislav A.; Khudyakov, Nikolai G.; Travnitskaya, Svetlana M.; Kornienko, Vladimir M.; Dobroljubov, Viktor V.; Chekhovsky, Sergei V.; Fedorenko, Galina V.; and Grabylnikova, Valentina I., 4,452,946, Cl. 524-541.000.

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Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.

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Indra, Jaromir, 4,452,196, Cl. 123-198.0DB.

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Rath, Gunter, 4,452,528, Cl. 355-51.000.

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Heinemann, Frederick E.; and Gavin, Thomas D., 4,452,143, Cl. 101-426.000.

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Rohner, Joachim; Zumfeld, Heinz; Mauries, Reinhard; and Preuhs, Hans-Jurgen, 4,452,035, Cl. 57-22.000.

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Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

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Lucking, Anthony J., 4,452,425, Cl. 251-144.000.

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Groh, Edward F.; Olson, Arne P.; Wade, David C.; and Robinson, Bryan W., 4,452,754, Cl. 376-335.000.

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Dietz, Karl J.; and Waelbroeck, Francois, 4,452,642, Cl. 134-1.000.

Wagemann, Dolores M.; and Myers, Connie S. Infant restraint. 4,451,932, Cl. 2-80.000.

Wagner, Alfred: *See*—
Ehle, Joachim; and Wagner, Alfred, 4,453,254, Cl. 373-93.000.

Wagner, Antoine: *See*—
Schaeffer, Andre; and Wagner, Antoine, 4,452,876, Cl. 430-162.000.

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Wolf, Ann L.; and Wagoner, John G., 4,453,042, Cl. 179-84.0VF.

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Gillingham, Gary R.; and Wahlquist, Fred H., 4,452,616, Cl. 55-302.000.

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Waiser, Shimon. Ratchet-type reversible wrench. 4,452,107, Cl. 81-63.200.

Waite, Frederick A., to Imperial Chemical Industries PLC. Modified liquid hydrocarbons. 4,452,610, Cl. 44-62.000.

Waite, Frederick A.; and Waters, Julian A., to Imperial Chemical Industries PLC. Manufacture of aqueous polymer dispersions and coating compositions derived from them. 4,453,261, Cl. 524-458.000.
Walker, Jerry L.: *See*—
Ralston, Paul H.; Whitney, Sandra L.; and Walker, Jerry L., 4,452,703, Cl. 210-698.000.
Wallace, Frank J., to South Western Industrial Research Limited. Differential compound engine. 4,452,043, Cl. 60-600.000.
Wallace, John B.; and Pearson, Charles G., to General Engineering & Manufacturing Corp. Locking and positioning device for reclining seats. 4,452,098, Cl. 74-531.000.
Walls, John E.: *See*—
Gillich, Thomas N.; Walls, John E.; Wanat, Stanley F.; and Rozell, William J., 4,452,674, Cl. 204-33.000.
Walsh, Arthur T.: *See*—
Cipris, Divna; and Walsh, Arthur T., 4,452,675, Cl. 204-56.00R.
Walsh, David A.; and Welstead, William J., Jr., to A. H. Robins Company, Inc. Trans-4-(2-chlorophenoxy)-1-ethyl-3-pyrrolidinol and anti-depressant use thereof. 4,452,809, Cl. 424-274.000.
Walsh, Thomas E.: *See*—
Powers, Edward J.; Walsh, Thomas E.; and Stewart, Donald R., 4,452,929, Cl. 523-403.000.
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Klinkmann, Kurt; and Wambach, Paul R., deceased, 4,453,020, Cl. 568-473.000.
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Wanatowicz, Edward W., Jr.; and Boma, Dennis G., to Illinois Tool Works Inc. Keyswitch configuration with torque rod holder. 4,453,063, Cl. 200-340.000.
Wandel, Hermann: *See*—
Eckstein, Konrad; and Wandel, Hermann, 4,452,284, Cl. 139-383.00A.
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Seng, Mary L.; Wanfried, Judith A.; and Beisel, Robert H., 4,451,933, Cl. 2-202.000.
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Fickes, Michael G.; and Warfield, Peter F., 4,452,879, Cl. 430-306.000.
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Bristol, James A.; and Badger, Edward W., 4,452,788, Cl. 424-253.000.
Butler, Donald E., 4,452,990, Cl. 548-543.000.
Maxwell, Donald R., 4,452,798, Cl. 424-250.000.
Warshawsky, Jerome. Support assembly for lamp swing arm. 4,453,204, Cl. 362-396.000.
Watanabe, Eifu, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Outboard motor. 4,452,194, Cl. 123-195.00P.
Watanabe, Henry; and Schultz, Andrew, to Stepan Chemical Company. Cleaner for ovens and the like using sodium alpha olefin sulfonate and sodium silicate. 4,452,731, Cl. 252-536.000.
Watatani, Yoshizumi; Ito, Shigeyuki; and Mohri, Katsuo, to Hitachi, Ltd. Video and sound signal recording and reproducing device. 4,453,186, Cl. 358-330.000.
Wataya, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Air-fuel ratio control apparatus. 4,452,211, Cl. 123-492.000.
Waterbury Farrel Div. of Textron, Inc.: *See*—
Roy, Donald A.; and Garms, Albert M., 4,452,095, Cl. 74-412.0TA.
Waters, Julian A.: *See*—
Waite, Frederick A.; and Waters, Julian A., 4,453,261, Cl. 524-458.000.
Watkins, John A. Depth sensing trigger mechanism. 4,452,552, Cl. 408-14.000.
Watson, James M.; Butler, James R.; and Victor, Mark, to Cosden Technology, Inc. Polymer modification system for vinylaromatic monomer production apparatus. 4,452,975, Cl. 528-493.000.
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Van Seters, Antonius J. C.; and Wattimena, Freddy, 4,453,025, Cl. 568-799.000.
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Bontje, Theodorus P. M.; Schuldink, Gerrit; Heetbrink, Gerrit H.; de Putter, Warner J.; and Kok, Bernardus H., 4,452,303, Cl. 165-142.000.
Webb, John W. M., to Bestobell (U.K.) Ltd. Valve. 4,452,427, Cl. 251-366.000.
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Ping, David T.; Reeve, Edwin; and Webber, Philip S., 4,452,332, Cl. 180-312.000.
Weber, Charles J.: *See*—
Boynton, William W.; and Weber, Charles J., 4,452,136, Cl. 101-93.050.
Weber, Harold J. Vehicle anti-theft ignition foiling device. 4,452,197, Cl. 123-198.00B.
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Christ, Richard; Wegner, Klaus; and Kroll, Hartmut, 4,453,081, Cl. 250-506.100.
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Nachtkamp, Klaus; Weider, Franz; Noll, Klaus; Pedain, Josef; and Hoehne, Klaus, 4,452,834, Cl. 427-379.000.
Wein, Sam. Variable size box construction. 4,452,367, Cl. 229-33.000.
Weinstein, Stephen B., to American Express Company. Protection system for intelligent cards. 4,453,074, Cl. 235-380.000.
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Trischman, Charles A.; Weissberger, Paula S.; and Steinert, Robert B., 4,452,928, Cl. 523-206.000.
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Konrad, Eugen; Husemeyer, Hans; and Mager, Herbert, 4,452,603, Cl. 8-405.000.
Wellinghoff, Stephen T.; Jenekhe, Samson A.; and Kedrowski, Thomas J., to Honeywell Inc. Stable electrically conducting polymers and method of making. 4,452,725, Cl. 252-500.000.
Wells, Roger F., to United Technologies Corporation. Automatic, fluid tight coupling. 4,452,277, Cl. 138-44.000.
Welstead, William J., Jr.: *See*—
Walsh, David A.; and Welstead, William J., Jr., 4,452,809, Cl. 424-274.000.
Wendler, Manfred; Marcinkowski, Jurgen; and Brehm, Jurgen, to Techno-Chemi Kessler & Co. GmbH. Tube winding head with flexible shafts. 4,452,661, Cl. 156-428.000.
Wentzell, Timothy H.; and Edwards, Lawrence J., to Combustion Engineering, Inc. Apparatus for cleaning and inspecting closure studs of a nuclear reactor vessel. 4,452,753, Cl. 376-249.000.
Werner, David G., to Seal Tite National, Inc. Insulating storm window attachment. 4,452,020, Cl. 52-202.000.
Werner, Friedrich, to Alcan Ohler GmbH. Flexible hose wound of a web material and reinforced with wire windings. 4,452,280, Cl. 138-131.000.
Wessely, David A., to Collins & Aikman Corporation. Process for dyeing shrinkable textile fabrics and resulting dyed fabrics. 4,452,607, Cl. 8-497.000.
Wessner, Richard A., to Reed & Barton Corporation. Memory book. 4,452,471, Cl. 281-48.000.
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Iwamoto, Akira; Hirata, Reiji; and Yako, Hikoya, 4,453,110, Cl. 315-241.00P.
West, Robert A., to Boxlox, Inc. Portable security container. 4,452,390, Cl. 232-4.00R.
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Kort, Willy J.; Bonta, Ivan L.; Adolfs, Martinus J. P.; and Westbroek, Dirk L., 4,452,794, Cl. 424-240.000.
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Samuel, William H., 4,452,573, Cl. 417-401.000.
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Icking, Friedrich; and Bucker, Heinrich, 4,452,268, Cl. 137-240.000.
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Tregoning, Geoffrey R., 4,452,343, Cl. 188-79.50K.
Westinghouse Electric Corp.: *See*—
Acker, Frank E., 4,453,111, Cl. 318-111.000.
Brown, Jerry L., 4,453,051, Cl. 191-22.00C.
Carlson, William G.; Gupta, Tapan K.; and Sweetana, Andrew S., Jr., 4,452,728, Cl. 252-518.000.
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Merlino, Paul J.; and Reilly, Kevin J., 4,453,113, Cl. 318-376.000.
Shuey, Kenneth C.; and Stechschulte, David L., 4,453,089, Cl. 307-253.000.
Siemon, John T., 4,452,847, Cl. 428-246.000.
Westvaco Corporation: *See*—
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Wheaton, Janette: *See*—
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Wheaton, L. A.; and Wheaton, Janette. Portable irrigation brake. 4,452,398, Cl. 239-712.000.
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Schucker, Robert C.; and Wheelock, Kenneth S., 4,452,693, Cl. 208-121.000.
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Karklys, Joseph; and Semerciyan, Mikayel, 4,453,067, Cl. 219-10.49R.
Whitcomb, Paul H.; and Bakowski, Thomas G., to Eaton Corporation. Feller assembly for tree harvesting apparatus. 4,452,287, Cl. 144-34.00E.
Whitehead & Kales Company: *See*—
Desai, Rajendra K., 4,452,027, Cl. 52-712.000.
Whitehurst, Darrell D.: *See*—
Mitchell, Thomas O.; and Whitehurst, Darrell D., 4,452,688, Cl. 208-10.000.
Whitely, Robert M.: *See*—
Paganini, Bruno J.; Advani, Jeram G.; Whitely, Robert M.; and Hale, William J., 4,453,267, Cl. 382-29.000.
Whitney, Sandra L.: *See*—
Ralston, Paul H.; Whitney, Sandra L.; and Walker, Jerry L., 4,452,703, Cl. 210-698.000.
Whittaker Corporation: *See*—
Harootion, Aramais, 4,452,105, Cl. 81-9.50R.
Whittenberger, John D.; and Hurwitz, Frances I., to United States of America, National Aeronautics and Space Administration. Method and apparatus for gripping uniaxial fibrous composite materials. 4,452,088, Cl. 73-856.000.
Whittington, Adron L.; and Whittington, Willie D. Window security system. 4,452,010, Cl. 49-51.000.

Whittington, Willie D.: *See*—
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Wichman, Cynthia A., to Kendall Company, The. Disposable garment with card tongue. 4,451,931, Cl. 2-51.000.

Wico Corporation: *See*—
Kim, Syng N., 4,453,060, Cl. 200-302.100.

Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Process for hydrogenation of carbon-carbon double bonds in an unsaturated polymer in latex form. 4,452,950, Cl. 525-339.000.

Widmyer, Richard H., to Texaco Inc. Method and means for uniformly distributing both phases of steam on the walls of a well. 4,452,309, Cl. 166-303.000.

Wilkinson, Stanley B., to General Electric Company. Overvoltage directional relay. 4,453,191, Cl. 361-84.000.

Wilkinson, William O.; and Rabenhorst, David W., to Johns Hopkins University, The. High speed imaging television system. 4,453,182, Cl. 358-108.000.

William H. Rorer, Inc.: *See*—
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,452,980, Cl. 544-211.000.

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Freeman, John W., Jr., 4,453,108, Cl. 315-5.180.

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Williams, Haydn W. R.: *See*—
Belanger, Patrice C.; Dufresne, Claude; Gillard, John W.; and Williams, Haydn W. R., 4,453,005, Cl. 562-492.000.

Williams, James N. Lifting tongs. 4,452,481, Cl. 294-118.000.

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Beblavi, James C.; and Williams, Laurence O., 4,452,423, Cl. 251-65.000.

Williams, Mark A., to Cincinnati Milacron Inc. Punctional fluid. 4,452,710, Cl. 252-33.600.

Williams Patent Crusher and Pulverizer Company: *See*—
Williams, Robert M., 4,452,400, Cl. 241-36.000.

Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Rotary shredding apparatus. 4,452,400, Cl. 241-36.000.

Williams, Roger O.: *See*—
Johnson, Richard E.; Williams, Roger O.; Higgins, Ronald W.; and Lewis, David M., 4,453,188, Cl. 360-78.000.

Wilson, Joe C.; Hirozawa, Stanley T.; Eisenstein, Stephen E.; and Maxwell, Jerrold F., to BASF Wyandotte Corporation. Compositions and process for inhibiting corrosion of aluminum. 4,452,758, Cl. 422-15.000.

Wilson, Terry L.: *See*—
Dob, Allan M.; Mead, Richard; and Wilson, Terry L., 4,453,152, Cl. 338-197.000.

Windmoller & Holscher: *See*—
Achelpohl, Fritz, 4,452,443, Cl. 271-279.000.
Achelpohl, Fritz, 4,452,597, Cl. 493-204.000.

Winkler, Gary: *See*—
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Winkler, John M.: *See*—
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Winterrowd, Kenneth W.: *See*—
Barrier, Frank W.; and Winterrowd, Kenneth W., 4,452,304, Cl. 166-70.000.

Winzer, Gerhard, to Siemens Aktiengesellschaft. Fiber optical bypass switch. 4,452,507, Cl. 350-96.200.

Wissler, Josef H., to Max-Planck Gesellschaft zur Forderung der Wissenschaften. Leukorecruitin. 4,452,735, Cl. 260-112.00B.

Withjack, Eric M., to Cities Service Company. Collapsible mobile solar energy power source. 4,452,234, Cl. 126-450.000.

Witt, Wolfram: *See*—
Lubben, Manfred; and Witt, Wolfram, 4,452,653, Cl. 149-11.000.

Wochnowski, Waldemar; and Hohm, Reinhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for conditioning tobacco. 4,452,256, Cl. 131-303.000.

Wohltjen, Henry; and Giuliani, John F., to United States of America, Navy. Method for bonding insulator to insulator. 4,452,624, Cl. 65-40.000.

Wojcik, Jacek J.: *See*—
Zielinski, Lech S.; Lafrance, Conrad; and Wojcik, Jacek J., 4,453,043, Cl. 179-90.0BD.

Wolf, Ann L.; and Smith, Louis W., to GTE Automatic Electric Inc. Telephone feature assignment circuit. 4,453,040, Cl. 179-81.00C.

Wolf, Ann L.; and Wagoner, John G., to GTE Automatic Electric Inc. Telephone station signaling lock circuit. 4,453,042, Cl. 179-84.0VF.

Wolf, Konrad: *See*—
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Won, Chong M.: *See*—
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Wong, Rayman Y.: *See*—
Bunker, Nathan S.; and Wong, Rayman Y., 4,452,810, Cl. 424-275.000.

Wood, Ronald L., Jr.; and Tempas, Robert J., to B & W Corporation. Cabinet drawer interlock. 4,452,498, Cl. 312-216.000.

Woodard, Kenneth E., Jr.; and Dotson, Ronald L., to OLIN Corporation. Electrodes for electrolytic cells. 4,452,685, Cl. 204-252.000.

Woodbridge, David D., to Radiolysis, Incorporated. Irradiator apparatus and method. 4,453,079, Cl. 250-432.00R.

Worden, Howard L. Form and method of fabricating a glass lampshade. 4,452,839, Cl. 428-38.000.

Workman, Michael J., to General Motors Corporation. Energy absorbing steering column and capsule mounting therefore. 4,452,096, Cl. 74-492.000.

Wrathall, Robert S., to Motorola Inc. ECL MOS Buffer circuits. 4,453,095, Cl. 307-475.000.

Wrenn, George E., Jr.; and Lewis, John, Jr., to United States of America, Energy. Method for depositing a uniform layer of particulate material on the surface of an article having interconnected porosity. 4,452,832, Cl. 427-350.000.

Wright, Joseph B.: *See*—
Monhardt, Richard J.; Orr, Alfred B.; Premont, Emile J.; and Wright, Joseph B., 4,452,565, Cl. 415-9.000.

Wright, Mervin E.; Peyraud, Sheila C.; and Nielsen, Bradley B., to Donaldson Company, Inc. Pleated filter element having integral pleat spacers. 4,452,619, Cl. 55-521.000.

Wurtman, Judith: *See*—
Wurtman, Richard J.; and Wurtman, Judith, 4,452,815, Cl. 424-330.000.

Wurtman, Richard J.; and Wurtman, Judith, to Massachusetts Institute of Technology. Method of utilizing d,l-fenfluramine for modifying feeding behavior. 4,452,815, Cl. 424-330.000.

Xerox Corporation: *See*—
Parisi, Michael A., 4,452,524, Cl. 355-3.0FU.

Yabuhara, Hideo: *See*—
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Yamada, Norio: *See*—
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Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; and Yoshiyasu, Hajimu, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker with arc restricting device. 4,453,053, Cl. 200-144.00R.

Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Sugimoto, Kenichi; and Tanabe, Yoshimitsu, to Mitsui Toatsu Chemicals, Inc. Process for producing fluorobenzophenone derivatives. 4,453,009, Cl. 568-316.000.

Yamaguchi, Akihiro: *See*—
Mita, Ryuichi; Ohoka, Masaharu; Higuchi, Chojiro; Katoh, Toshio; Kawashima, Nobuyuki; Yamaguchi, Akihiro; Nagai, Shousuke; and Takano, Takao, 4,453,008, Cl. 562-557.000.

Yamaguchi, Hiroaki: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamaji, Teizo: *See*—
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Yamamoto, Yoshihisa: *See*—
Obama, Isamu; and Yamamoto, Yoshihisa, 4,452,860, Cl. 428-367.000.

Yamamura, Masami: *See*—
Tamura, Toshiaki; Otani, Yoshiaki; Otake, Hiroshi; and Yamamura, Masami, 4,453,144, Cl. 333-140.000.

Yamanaka, Hideaki: *See*—
Takaya, Takao; Takasugi, Hisashi; and Yamanaka, Hideaki, 4,452,851, Cl. 424-246.000.

Yamanaka, Mitsuo: *See*—
Okamoto, Hidemasa; Yamanaka, Mitsuo; and Takahashi, Mokoto, 4,452,931, Cl. 524-100.000.

Yamatsuta, Kohji; and Nishio, Ken-ichi, to Sumitomo Chemical Company, Limited. Process for producing fiber-reinforced metal composite material. 4,452,865, Cl. 428-614.000.

Yamauchi, Mitsuru: *See*—
Namba, Masaharu; Yamauchi, Mitsuru; and Kazama, Toyoki, 4,452,828, Cl. 427-39.000.

Yamazaki, Atsuo: *See*—
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Yamazaki, Ken-ichi; Takao, Shoji; and Hara, Hiroshi, to Terumo Corporation. Process for producing a low-molecular weight peptide composition and nutrient agent containing the same. 4,452,888, Cl. 435-69.000.

Yamazaki, Shunpei. Magnetic medium. 4,452,857, Cl. 428-328.000.

Yan, Tsoung Y.: *See*—
Fowles, Patrick E.; and Yan, Tsoung Y., 4,452,621, Cl. 62-534.000.

Yan, Tsoung-Yuan, to Mobil Oil Corporation. Treatment of subterranean uranium-bearing formations. 4,452,490, Cl. 299-4.000.

Yang, Che-Ming: *See*—
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Yang, Duck J., to Du Pont de Nemours, E. I., and Company. Process for coating crystalline silica polymorphs. 4,452,909, Cl. 502-69.000.

Yankov, Rossen A.: *See*—
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Yasuo, Higashibata: *See*—
Ikuo, Yamaguchi; Yasuo, Higashibata; Masaru, Fujimura; Toshio, Nagashima; and Shunsuke, Sugano, 4,452,019, Cl. 52-167.000.

Yauk, Alvin R. Sliding rule and protractor. 4,451,993, Cl. 33-472.000.

Yazidjian, Jean-Claude, to Framatome & CIE. Method and device for unclogging the top surface of the tube plate of a steam generator. 4,452,183, Cl. 122-392.000.

Yerkes, John W.: *See*—
Staler, Terry; and Yerkes, John W., 4,453,119, Cl. 320-39.000.

Yevich, Joseph P.: *See*—
Temple, Davis L., Jr.; and Yevich, Joseph P., 4,452,799, Cl. 424-250.000.

Yi, Ching Sui A.: *See*—
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Yokoshima, Minoru; Nawata, Kazuyoshi; Hironaka, Tetsuo; and Takahashi, Hideaki, to Nippon Kayaku Kabushiki Kaisha. Di(meth)acrylate esters of hydroxypivalyl hydroxypivalate ε-caprolactone condensates. 4,452,996, Cl. 560-185.000.

Yokoyama, Hiroshi; and Ishida, Tokuzi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Duplex carburetor and intake system for internal combustion engines. 4,452,218, Cl. 123-579.000.

Yokozawa, Masami: *See*—
Tateno, Kenichi; Yokozawa, Masami; Fujii, Hiroyuki; Nishikawa, Mikio; Katoh, Michio; and Wada, Fujio, 4,451,973, Cl. 29-588.000.

Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Method for determining clay content in tailings and sludge. 4,452,900, Cl. 436-72.000.

Yoshida, Kotaro: *See*—
Koda, Toshihide; Fujisaki, Shuji; Yoshida, Kotaro; Kawaguchi, Susumu; and Asada, Ken, 4,452,571, Cl. 417-286.000.

Yoshida, Noriyuki, to Brother Kogyo Kabushiki Kaisha. DC Motor control system. 4,453,115, Cl. 318-434.000.

Yoshida, Ryo: *See*—
Nagano, Eiki; Hashimoto, Shunichi; Yoshida, Ryo; Matsumoto, Hiroshi; and Kamoshita, Katsuzo, 4,452,981, Cl. 544-236.000.

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Yoshihara, Kenji: *See*—
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Yoshioka, Keiichi; Kinoshita, Noboru; and Ono, Yutaka, to Kawasaki Steel Corporation. Motorcycle disc braking materials of a low carbon martensitic stainless steel. 4,452,649, Cl. 148-37.000.

Yoshioka, Tamotsu: *See*—
Ishikura, Shinichi; Yoshioka, Tamotsu; and Mizuguchi, Ryuzo, 4,452,746, Cl. 260-501.120.

Yoshiyasu, Hajimu: *See*—
Yamagata, Shinji; Hisatsune, Fumiyuki; Terachi, Junichi; and Yoshiyasu, Hajimu, 4,453,053, Cl. 200-144.00R.

Yoshizumi, Motohiko, to Mitsubishi Kinzoku Kabushiki Kaisha. Electroconductive powder and process for production thereof. 4,452,830, Cl. 427-215.000.

Young, John S.: *See*—
Daniels, William R.; and Young, John S., 4,453,048, Cl. 179-175.20R.
Daniels, William R.; and Young, John S., 4,453,049, Cl. 179-175.20R.

Youngstown Steel Door Company, The: *See*—
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Yourd, Roland B.: *See*—
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Yusa, Yasuhiro: *See*—
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Yvorra, Georges. Animal identification device. 4,451,999, Cl. 40-301.000.

Zalipsky, Jerome J.: *See*—
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,452,980, Cl. 544-211.000.

Zapf, Otto; and Kuchinke, Josef. Chair type furniture. 4,452,486, Cl. 297-343.000.

Zarogatsky, Leonid P.; Ivanov, Boris G.; Ivanov, Nikolai A.; Mitrofanov, Evgeny S.; Safronov, Andrei N.; Turkin, Vladimir Y.; and Cherkassky, Vladimir A. Inertia cone crusher. 4,452,401, Cl. 241-207.000.

Zebrowski, Dietmar: *See*—
Ehlert, Klaus-Peter; and Zebrowski, Dietmar, 4,452,432, Cl. 266-50.000.

Zeilon, Sten O. Method for the exchange of heat between liquid and air and an apparatus for carrying the method into effect. 4,452,300, Cl. 165-1.000.

Zeissler, George: *See*—
Lijewski, Michael E.; and Zeissler, George, 4,452,103, Cl. 74-817.000.

Zeitlin, Robert: *See*—
Shida, Mitsuzo; Zeitlin, Robert; Machonis, John, Jr.; and Adur, Ashok M., 4,452,942, Cl. 525-74.000.

Zeller, Albert M.: *See*—
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Zenith Radio Corporation: *See*—
Capek, Raymond G.; and Garrett, Elgie, 4,453,153, Cl. 338-309.000.

Zenyaku Kogyo Kabushiki Kaisha: *See*—
Mitsuhashi, Hiroshi; Mizuno, Den-ichi; Hayashi, Koji; Abe, Shigeru; Takase, Muneaki; and Narita, Toshiharu, 4,452,786, Cl. 424-182.000.

Zepp, Charles M.: *See*—
Locatell, Louis, Jr.; and Zepp, Charles M., 4,452,878, Cl. 430-215.000.

Zielinski, Lech S.; Lafrance, Conrad; and Wojcik, Jacek J., to Northern Telecom Limited. Telephone for a physically handicapped person. 4,453,043, Cl. 179-90.0BD.

Zievers, James F.; and Eggerstedt, Paul, to Industrial Filter & Pump Manufacturing Co. Process for manufacturing a filter aid. 4,452,707, Cl. 210-777.000.

Zillhardt, Paul J., to Rockwell International Corporation. Grease seal for bearing arrangement. 4,452,497, Cl. 308-187.100.

Zimmer, Johann: *See*—
Maurer, Werner; Zimmer, Johann; and Haus, Artur, 4,453,002, Cl. 562-429.000.

Zimmerman, Robert L.: *See*—
Speranza, George P.; and Zimmerman, Robert L., 4,452,922, Cl. 521-137.000.

Zink, Jurgen: *See*—
Schneider, Norbert; van der Graaf, Jakob H. J. M.; and Zink, Jurgen, 4,452,700, Cl. 210-621.000.

Zion, Earl M., to Owens-Corning Fiberglas Corporation. Method of installing a reinforced thermosetting resin sucker rod assembly composed of pultruded arcuate sections. 4,452,314, Cl. 166-378.000.

Zitser, Vitaly A.; Melnikov, Alexandr V.; Bachelis, Leonid V.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; Levinson, Vladimir A.; Shishkin, Nikolai K.; Ivanov, Vladimir A.; and Morozov, Jury E., to Tsentralnoe Proektnokonstruktorskoe I Tekhnologicheskoe Bjuro Glavsantekhprom. Apparatus for production of cores from fluidized sands in hot boxes. 4,452,295, Cl. 164-186.000.

Zlotnik, Arnold H. Tamper-resistant deodorant cabinet. 4,452,500, Cl. 312-236.000.

Zofchak, Albert: *See*—
Deckner, George E.; O'Grady, Hedwig; and Zofchak, Albert, 4,452,989, Cl. 548-537.000.

Zolotov, Lev A.: *See*—
Nikitin, Pavel Z.; Danilevich, Yanush B.; Maslennikov, Konstantin N.; Kabanov, Pavel S.; Turutin, Veniamin S.; Telezhnikov, Jury F.; Potekhin, Konstantin F.; Zolotov, Lev A.; Bezchastnov, Gennady A.; Nemeni, Tibor M.; and Nikolsky, Alexandr I., 4,453,098, Cl. 310-71.000.

Zuegel, Markus A.: *See*—
Augstein, Wolfgang; Frasch, Peter; Ivancic, Blanka; and Zuegel, Markus A., 4,452,881, Cl. 430-323.000.

Zuleeg, Rainer R., to McDonnell Douglas Corporation. Method of making planar III-V compound device by ion implantation. 4,452,646, Cl. 148-1.500.

Zumfeld, Heinz: *See*—
Rohner, Joachim; Zumfeld, Heinz; Mauries, Reinhard; and Preuhs, Hans-Jurgen, 4,452,035, Cl. 57-22.000.

Zumtobel GmbH & Co.: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF JUNE, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

E.G.O. Regeltechnik GmbH: *See*—
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,595, Cl. 219-507.000.
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,597, Cl. 219-507.000.
Kicherer, Robert; and Goessler, Gerhard, Re. 31,596, Cl. 219-507.000.

Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, to E.G.O. Regeltechnik GmbH. Electric power controllers. Re. 31,595, Cl. 219-507.000.

Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, to E.G.O. Regeltechnik GmbH. Electric power controllers. Re. 31,597, Cl. 219-507.000.

Goessler, Gerhard: *See*—
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,595, Cl. 219-507.000.
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,597, Cl. 219-507.000.
Kicherer, Robert; and Goessler, Gerhard, Re. 31,596, Cl. 219-507.000.

Industrial Metal Products Corp.: *See*—
Judge, Edward E., Jr., Re. 31,593, Cl. 51-58.000.

Judge, Edward E., Jr., to Industrial Metal Products Corp. Universal crankshaft finishing machine. Re. 31,593, Cl. 51-58.000.

Kicherer, Robert; and Goessler, Gerhard, to E.G.O. Regeltechnik GmbH. Electric power controllers. Re. 31,596, Cl. 219-507.000.

Kicherer, Robert: *See*—
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,595, Cl. 219-507.000.
Fischer, Karl; Kicherer, Robert; and Goessler, Gerhard, Re. 31,597, Cl. 219-507.000.

McCluskey, John R. Aperture forming device. Re. 31,598, Cl. 249-177.000.

Mima, Hirosi, to Murata Kikai Kabushiki Kaisha. Method and apparatus for splicing spun yarns. Re. 31,594, Cl. 57-22.000.

Murata Kikai Kabushiki Kaisha: *See*—
Mima, Hirosi, Re. 31,594, Cl. 57-22.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Adams, John M.: *See*—
Alferness, Clifton A.; and Adams, John M., B1 4,066,086, Cl. 128-421.000.

Alexandrov, Vladimir I.; Osiko, Vyacheslav V.; Tatarinsev, Vladimir M.; and Udovenchik, Viktor T., to Vsesojuznoje Objedinenije "Licensintorg" . Monocrystals based on stabilized zirconium or hafnium dioxide and method of production thereof. B1 4,153,469, 6-5-84, Cl. 501-86.000.

Alferness, Clifton A.; and Adams, John M., to Medtronic, Inc. Programmable body stimulator. B1 4,066,086, 6-5-84, Cl. 128-421.000.

Bagg, Greville E. G.; Cook, John; Dingle, Leslie E.; Edwards, Henry; and Ziebland, Hans, to National Research Development Corporation. Manufacture of composite materials. B1 4,016,031, 6-5-84, Cl. 162-213.000.

Brzezinski, Kazimierz J., to Kawneer Company Inc. Building wall construction. B1 3,527,010, 6-5-84, Cl. 52-397.000.

Brzezinski, Kazimierz J., to Kawneer Company Inc. Building wall Construction. B1 3,769,775, 6-5-84, Cl. 52-731.000.

Cook, John: *See*—
Bagg, Greville E. G.; Cook, John; Dingle, Leslie E.; Edwards, Henry; and Ziebland, Hans, B1 4,016,031, Cl. 162-213.000.

Daly, Robert E.: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 1,030,610, Cl. 366-153.000.

Dingle, Leslie E.: *See*—
Bagg, Greville E. G.; Cook, John; Dingle, Leslie E.; Edwards, Henry; and Ziebland, Hans, B1 4,016,031, Cl. 162-213.000.

Edwards, Henry: *See*—
Bagg, Greville E. G.; Cook, John; Dingle, Leslie E.; Edwards, Henry; and Ziebland, Hans, B1 4,016,031, Cl. 162-213.000.

Gacki, Leonard W.; and Daly, Robert E., to Picker Corporation. Fluid mixing and dispensing system. B1 1,030,610, 6-5-84, Cl. 366-153.000.

Kaul, Martin: *See*—
Opprecht, Paul; and Kaul, Martin, B1 4,160,892, Cl. 219-83.000.

Kawneer Company Inc.: *See*—
Brzezinski, Kazimierz J., B1 3,527,010, Cl. 52-397.000.
Brzezinski, Kazimierz J., B1 3,769,775, Cl. 52-731.000.

Kronsbein, Dirk G., to Ultrafilter GmbH. Filters. B1 4,157,968, 6-5-84, Cl. 210-489.000.

Medtronic, Inc.: *See*—
Alferness, Clifton A.; and Adams, John M., B1 4,066,086, Cl. 128-421.000.

National Research Development Corporation: *See*—
Bagg, Greville E. G.; Cook, John; Dingle, Leslie E.; Edwards, Henry; and Ziebland, Hans, B1 4,016,031, Cl. 162-213.000.

Opprecht, Paul; and Kaul, Martin, to Opprecht, Paul. Method and apparatus for seam welding overlapped edges. B1 4,160,892, 6-5-84, Cl. 219-83.000.

Osiko, Vyacheslav V.: *See*—
Alexandrov, Vladimir I.; Osiko, Vyacheslav V.; Tatarinsev, Vladimir M.; and Udovenchik, Viktor T., B1 4,153,469, Cl. 501-86.000.

Picker Corporation: *See*—
Gacki, Leonard W.; and Daly, Robert E., B1 1,030,610, Cl. 366-153.000.

Tatarinsev, Vladimir M.: *See*—
Alexandrov, Vladimir I.; Osiko, Vyacheslav V.; Tatarinsev, Vladimir M.; and Udovenchik, Viktor T., B1 4,153,469, Cl. 501-86.000.

Udovenchik, Viktor T.: *See*—
Alexandrov, Vladimir I.; Osiko, Vyacheslav V.; Tatarinsev, Vladimir M.; and Udovenchik, Viktor T., B1 4,153,469, Cl. 501-86.000.

Ultrafilter GmbH: *See*—
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CLASSIFICATION OF PATENTS

ISSUED JUNE 5, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

51 4,451,931
80 4,451,932
113 4,451,934
185 R 4,451,935
202 4,451,933

CLASS 3

1.5 4,451,936
4,451,937
13 4,451,938
23 4,451,939

CLASS 4

228 4,451,941
234 4,451,940
420.2 4,451,942
661 4,451,943

CLASS 5

61 4,451,944
63 4,451,945
477 4,451,946

CLASS 7

107 4,451,947
4,451,948

CLASS 8

115.5 4,452,601
404 4,452,602
405 4,452,603
471 4,452,604
494 4,452,605
496 4,452,606
497 4,452,607
524 4,452,608
694 4,452,609

CLASS 12

146 C 4,451,949

CLASS 14

18 4,451,950

CLASS 15

330 4,451,951

CLASS 17

1 B 4,451,952
21 4,451,953
39 4,451,954

CLASS 24

20 CW 4,451,955
68 CD 4,451,956
573 4,451,957
636 4,451,958

CLASS 29

156.8 R 4,451,959
157.3 R 4,451,960
160.6 4,451,961
163.5 F 4,451,962
407 4,451,963
437 4,451,964
450 4,451,965
521 4,451,966
564.3 4,451,967
572 4,451,968
4,451,969
574 4,451,970
578 4,451,971
583 4,451,972
588 4,451,973
611 4,451,974
705 4,451,975
740 4,451,976
748 4,451,977
776 4,451,978
824 4,451,979

CLASS 30

41 4,451,980
123.3 4,451,981
161 4,451,982
276 4,451,983
346.52 4,451,984

CLASS 33

18 R 4,451,985
126.5 4,451,986
174 L 4,451,987
4,451,988
286 4,451,989
327 4,451,990
396 4,451,991
412 4,451,992
472 4,451,993

CLASS 36

28 4,451,994
51 4,451,995
129 4,451,996

CLASS 38

102.2 4,451,997

CLASS 40

152 4,451,998
301 4,451,999
574 4,452,000

CLASS 42

23 4,452,001
87 4,452,002

CLASS 43

25.2 4,452,003
61 4,452,004
100 4,452,005
122 4,452,006

CLASS 44

62 4,452,610

CLASS 47

57.6 4,452,008

CLASS 48

111 4,452,611

CLASS 49

25 4,452,009
51 4,452,010
56 4,452,011
181 4,452,012
344 4,452,013
360 4,452,014
386 4,452,015

CLASS 51

58 Re.31,593
163.2 4,452,016

CLASS 52

2 4,452,017
155 4,452,018
167 4,452,019
202 4,452,020
311 4,452,021
4,452,022
378 4,452,023
397 B1 3,527,010
473 4,452,024
668 4,452,025
684 4,452,026
712 4,452,027
731 B1 3,769,775
744 4,452,028
747 4,452,029

CLASS 53

426 4,452,030
586 4,452,031

CLASS 55

25 4,452,612
96 4,452,613
220 4,452,614
227 4,452,615
302 4,452,616
341 R 4,452,617
362 4,452,618
521 4,452,619

CLASS 56

12.3 4,452,032
12.7 4,452,033
320.1 4,452,034

CLASS 57

22 Re.31,594
4,452,035

CLASS 59

80 4,452,036

CLASS 60

39.08 4,452,037
39.31 4,452,038
207 4,452,039
274 4,452,040
384 4,452,041
517 4,452,042
600 4,452,043
4,452,044
641.11 4,452,046
641.15 4,452,047
641.8 4,452,045
656 4,452,048

CLASS 62

74 4,452,049
196.4 4,452,050
238.6 4,452,620
467 4,452,051
534 4,452,621

CLASS 63

1 R 4,452,052

CLASS 65

2 4,452,622
3.12 4,452,623
40 4,452,624

CLASS 66

123 4,452,053

CLASS 68

133 4,452,054
189 4,452,055
242 4,452,056

CLASS 69

6.5 4,452,057

CLASS 70

137 4,452,058
278 4,452,059

CLASS 71

76 4,452,625
92 4,452,626
4,452,627
93 4,452,628
103 4,452,629
111 4,452,630
120 4,452,631
122 4,452,632

CLASS 72

117 4,452,060
201 4,452,061
348 4,452,062
356 4,452,063
459 4,452,064

CLASS 73

7 4,452,065
12 4,452,066
23.1 4,452,067
28 4,452,068
35 4,452,069
49.8 4,452,070
52 4,452,071
116 4,452,072
117 4,452,073
119 A 4,452,074
151 4,452,075
155 4,452,076
4,452,077
432 HA 4,452,078
488 4,452,079
588 4,452,080
597 4,452,081
599 4,452,082
607 4,452,083
609 4,452,084
631 4,452,085
643 4,452,086
786 4,452,087
856 4,452,088
861.23 4,452,089
861.28 4,452,090
864.52 4,452,091

CLASS 74

5.46 4,452,092
84 R 4,452,093
333 4,452,094
412 TA 4,452,095
492 4,452,096
501 R 4,452,097
531 4,452,098
695 4,452,099
711 4,452,100
733 4,452,101
801 4,452,102
817 4,452,103
822 4,452,104

CLASS 75

0.5 A 4,452,633
93 R 4,452,634

CLASS 81

9.5 R 4,452,105
43 4,452,106
63.2 4,452,107
129 4,452,108

CLASS 82

3 4,452,109
4 A 4,452,111
4 C 4,452,110
47 4,452,112

CLASS 83

56 4,452,113
100 4,452,114
157 4,452,115
346 4,452,116
467 R 4,452,117
871 4,452,118

CLASS 84

1.03 4,452,119
306 4,452,120
421 4,452,121
458 4,452,122

CLASS 89

1.706 4,452,123
1.816 4,452,124

CLASS 91

189 A 4,452,125

CLASS 92

6 R 4,452,126
159 4,452,127
163 4,452,128

CLASS 98

2.18 4,452,129

CLASS 99

307 4,452,130
402 4,452,131
483 4,452,132

CLASS 100

88 4,452,133
90 4,452,134
153 4,452,135

CLASS 101

93.05 4,452,136
93.22 4,452,137
127.1 4,452,138
148 4,452,139
181 4,452,140
348 4,452,141
368 4,452,142
426 4,452,143

CLASS 102

453 4,452,144
501 4,452,145

CLASS 104

7 R 4,452,146

CLASS 105

199 C 4,452,148
250 4,452,149
377 4,452,150

CLASS 106

74 4,452,635
76 4,452,636
89 4,452,637
97 4,452,638
205 4,452,639

CLASS 108

44 4,452,151

CLASS 110

235 4,452,152
247 4,452,153
346 4,452,154
4,452,155

CLASS 112

97 4,452,156
221 4,452,157
235 4,452,158
258 4,452,159
410 4,452,160

CLASS 114

39 4,452,161
74 A 4,452,162
77 R 4,452,163
112 4,452,164
125 4,452,165
282 4,452,166

CLASS 116

173 4,452,167
200 4,452,168

CLASS 118

50 4,452,169
4,452,170
58 4,452,171
203 4,452,172
652 4,452,173
689 4,452,174

CLASS 119

14.03 4,452,175
14.17 4,452,176
14.32 4,452,177
20 4,452,178
81 4,452,179

CLASS 122

1 A 4,452,180
4,452,181
32 4,452,182
392 4,452,183
504.1 4,452,184

CLASS 123

41.58 4,452,185
90.16 4,452,186
4,452,187
90.18 4,452,188
143 B 4,452,189
179 G 4,452,190
179 H 4,452,191
195 AC 4,452,195
195 P 4,452,194
195 R 4,452,192
4,452,193
198 B 4,452,197
198 DB 4,452,196
310 4,452,198
335 4,452,199
339 4,452,200
4,452,201
403 4,452,203
417 4,452,204
419 4,452,205
425 4,452,206
440 4,452,207
481 4,452,208
489 4,452,209
490 4,452,210
492 4,452,211
493 4,452,212
494 4,452,202
516 4,452,213
523 4,452,214
557 4,452,215
563 4,452,216
571 4,452,217
579 4,452,218
591 4,452,219
644 4,452,220
661 4,452,221

CLASS 124

24 R 4,452,222

CLASS 125

11 R 4,452,223

CLASS 126

41 R 4,452,224
92 B 4,452,225
373 4,452,226
415 4,452,227
428 4,452,228
429 4,452,229
431 4,452,230
434 4,452,231
439 4,452,232
443 4,452,233
450 4,452,234

CLASS 127

37 4,452,640
43 4,452,641

CLASS 128

1 R 4,452,235
4 4,452,236
60 4,452,237
66 4,452,238
200.17 4,452,239
201.18 4,452,240
204.18 4,452,241
205.26 4,452,242
314 4,452,243
321 4,452,244
334 R 4,452,245
340 4,452,246
402 4,452,247
419 PG 4,452,248
421 B1 4,066,086
642 4,452,249
653 4,452,250
655 4,452,251
671 4,452,252
766 4,452,253
785 4,452,254

CLASS 131

282 4,452,255
303 4,452,256
310 4,452,257
329 4,452,258
349 4,452,259
364 4,452,260

CLASS 132

7 4,452,261
88.5 4,452,262

CLASS 134

1 4,452,642
3 4,452,643
45 4,452,263
58 R 4,452,264

CLASS 136

256 4,453,030

CLASS 137

4 4,452,265
15.1 4,452,266
116.5 4,452,267
240 4,452,268
338 4,452,269
369 4,452,271
454.6 4,452,272
486 4,452,273
625.22 4,452,274

CLASS 138

30 4,452,275
4,452,276
44 4,452,277
94.3 4,452,278
126 4,452,279
131 4,452,280

CLASS 139

76 4,452,281
88 4,452,282
192 4,452,283
383 A 4,452,284

CLASS 141

392 4,452,285

CLASS 144

34 E 4,452,286
4,452,287
208 C 4,452,288

CLASS 145

62 4,452,289

CLASS 148

1.5 4,452,644
4,452,645
4,452,646
3 4,452,647
11.5 F 4,452,648
31.5 4,452,650
37 4,452,649
431 4,452,651
4,452,652

CLASS 149

11 4,452,653

CLASS 152

244 4,452,290
359 4,452,291

CLASS 156

91 4,452,654
126 4,452,655
174 4,452,656
198 4,452,657
243 4,452,666
245 4,452,658
361 4,452,659
384 4,452,667
422 4,452,660
428 4,452,661
562 4,452,662
575 4,452,663
631 4,452,664
643 4,452,665

CLASS 160

133 4,452,292
232 4,452,293
395 4,452,294

CLASS 162

199 4,452,668
213 B1 4,016,031
305 4,452,669

CLASS 164

186 4,452,295
363 4,452,296
467 4,452,297
485 4,452,298
521 4,452,299

CLASS 165

1 4,452,300
42 4,452,301
133 4,452,302
142 4,452,303

CLASS 166

70 4,452,304
117.5 4,452,305
155 4,452,306
174 4,452,307
274 4,452,308
303 4,452,309
319 4,452,310
324 4,452,311
339 4,452,312
373 4,452,313
378 4,452,314

CLASS 172

29 4,452,315
41 4,452,316
266 4,452,317
311 4,452,318
573 4,452,319
708 4,452,320

CLASS 174

36 4,453,031
46 4,453,032
52 FP 4,453,033
79 4,453,034
103 4,453,035
4,453,036

CLASS 175

46 4,452,321
107 4,452,322
229 4,452,323
393 4,452,324
410 4,452,325

CLASS 177

256 4,452,326

CLASS 179

16 F 4,453,037
81 B 4,453,038
4,453,039
81 C 4,453,040
84 C 4,453,041
84 VF 4,453,042
90 BD 4,453,043
110 A 4,453,044
146 R 4,453,045
4,453,046
4,453,047
175.2 R 4,453,048
4,453,049
182 R 4,453,050

CLASS 180

11 4,452,327
89.14 4,452,328
89.15 4,452,329
219 4,452,330
247 4,452,331
312 4,452,332

CLASS 181

144 4,452,333
175 4,452,334
214 4,452,335

CLASS 182

82 4,452,336
178 4,452,337
187 4,452,338
232 4,452,339

CLASS 187

8.43 4,452,340
29 R 4,452,341

CLASS 188

69 4,452,342
79.5 GT 4,452,344
79.5 K 4,452,343
207 4,452,345
250 G 4,452,346
330 4,452,347

CLASS 190

122 4,452,348

CLASS 191

22 C 4,453,051

CLASS 192

30 W 4,452,349

CLASS 198

424 4,452,350
434 4,452,351
482 4,452,352
492 4,452,353

CLASS 200

85 R 4,453,052
144 B 4,453,054
144 R 4,453,053
147 R 4,453,055
153 SC 4,453,056
243 4,453,057
283 4,453,058
296 4,453,059
302.1 4,453,060
306 4,453,061
314 4,453,062
340 4,453,063

CLASS 201

6 4,452,670

CLASS 202

185 A 4,452,671

CLASS 204

1 T 4,452,672
29 4,452,673
33 4,452,674
56 R 4,452,675
129 4,452,676
129.1 4,452,677
163 R 4,452,678
164 4,452,679
181 R 4,452,680
4,452,681
196 4,452,683
206 4,452,684
252 4,452,685
298 4,452,686
403 4,452,682
428 4,452,687

CLASS 206

5 4,452,354
45.31 4,452,355
45.32 4,452,356
339 4,452,357
366 4,452,358

CLASS 208

10 4,452,688
11 R 4,452,689
46 4,452,690
86 4,452,691
108 4,452,692
121 4,452,693

CLASS 209

672 4,452,694

CLASS 210

168 4,452,695
170 4,452,696
172 4,452,697
286 4,452,705
489 B1 4,157,968
503 4,452,698
608 4,452,699
621 4,452,700
627 4,452,701
638 4,452,702
698 4,452,703
701 4,452,704
722 4,452,706
777 4,452,707

CLASS 211

41 4,452,359
59.1 4,452,360
60 T 4,452,361
75 4,452,362

CLASS 215

216 4,452,363
253 4,452,364
346 4,452,365

CLASS 219

10.49 R 4,453,067
10.55 D 4,453,065
10.55 F 4,453,064
10.55 M 4,453,066
10.77 4,453,068
69 G 4,453,071
69 P 4,453,069
69 W 4,453,070
83 B1 4,160,892
86.23 4,453,072
130.1 4,453,073
507 Re.31,595
Re.31,596
Re.31,597

CLASS 220

4 R 4,452,366
67 4,452,368
85 H 4,452,369
93 4,452,370
315 4,452,371
316 4,452,372
335 4,452,373
458 4,452,374
4,452,375

CLASS 221

198 4,452,376

CLASS 222

1 4,452,377
107 4,452,378
207 4,452,379
335 4,452,380
465 R 4,452,381
529 4,452,382

CLASS 224

208 4,452,383
314 4,452,384
321 4,452,385

CLASS 226

197 4,452,386

CLASS 227

8 4,452,387
132 4,452,388

CLASS 228

203 4,452,389

CLASS 229

33 4,452,367
72 4,452,399

CLASS 232

4 R 4,452,390

CLASS 235

380 4,453,074

CLASS 236

49 4,452,391

CLASS 238

349 4,452,392

CLASS 239

57 4,452,393
177 R 4,452,394
223 4,452,396
265.15 4,452,395
455 4,452,397
463 4,452,578
712 4,452,398

CLASS 241

36 4,452,400
207 4,452,401

CLASS 242

47.01 4,452,402
55.2 4,452,403
71.8 4,452,404
107.4 A 4,452,405
195 4,452,406
198 4,452,407
199 4,452,408
204 4,452,409

CLASS 244

12.2 4,452,410
49 4,452,411
172 4,452,412

CLASS 248

176 4,452,413
278 4,452,414
312.1 4,452,415
447.2 4,452,416
604 4,452,417
666 4,452,418

CLASS 249

53 R 4,452,419
175 4,452,420
177 Re.31,598

CLASS 250

202 4,453,084
203 R 4,453,085
307 4,453,086
334 4,453,087
363 S 4,453,075
374 4,453,076
423 R 4,453,077
425 4,453,078
432 R 4,453,079
443.1 4,453,080
506.1 4,453,081
561 4,453,082
4,453,083

CLASS 251

1 B 4,452,421
25 4,452,422
65 4,452,423
129 4,452,424
144 4,452,425
335 B 4,452,426
366 4,452,427
367 4,452,428

CLASS 252

8.55 D 4,452,708
8.9 4,452,709
33.6 4,452,710
49.3 4,452,711
4,452,712
61 4,452,714
75 4,452,715
78.5 4,452,716
99 4,452,713
109 4,452,717
299.61 4,452,718
299.63 4,452,719
301.16 4,452,720
310 4,452,721
311 4,452,722
313 S 4,452,723
500 4,452,725
518 4,452,726
4,452,727
4,452,728
4,452,729
522 R 4,452,730
536 4,452,731
547 4,452,732
632 4,452,733

CLASS 254

344 4,452,429
391 4,452,430

CLASS 256

13.1 4,452,431

CLASS 260

112 B 4,452,735
112 R 4,452,734
112.5 R 4,452,736
192 4,452,737
239 BC 4,452,739
239 D 4,452,738
245.83 4,452,740
351 4,452,741
367 4,452,742
403 4,452,743
412.2 4,452,744
429 R 4,452,724
465 E 4,452,745
501.12 4,452,746

CLASS 264

4.1 4,452,747
25 4,452,748
30 4,452,749
40.3 4,452,750
45.5 4,452,751
555 4,452,752

CLASS 266

50 4,452,432
142 4,452,433
159 4,452,434

CLASS 267

36 A 4,452,435
64.15 4,452,436
64.22 4,452,437
103 4,452,438

CLASS 269

323 4,452,439

CLASS 271

3.1 4,452,440
93 4,452,441
204 4,452,442
279 4,452,443

CLASS 272

65 4,452,444
73 4,452,445
86 4,452,446
96 4,452,447
131 4,452,448
134 4,452,449

CLASS 273

22 4,452,450
67 A 4,452,451
73 A 4,452,452
93 R 4,452,453
153 S 4,452,454
155 4,452,455
169 4,452,456
256 4,452,457
310 4,452,458
422 4,452,459
4,452,460
426 4,452,461

CLASS 277

105 4,452,462
120 4,452,463
216 4,452,464

CLASS 280

403 4,452,465
432 4,452,466
615 4,452,467
641 4,452,468
801 4,452,469
802 4,452,470

CLASS 281

48 4,452,471

CLASS 285

3 4,452,472
81 4,452,473
334.1 4,452,474

CLASS 292

31 4,452,475
150 4,452,476

CLASS 294

16 4,452,477
86.28 4,452,478
88 4,452,479
104 4,452,480
118 4,452,481

CLASS 296

10 4,452,482
213 4,452,483

CLASS 297

6 4,452,484
284 4,452,485
343 4,452,486
411 4,452,487
452 4,452,488

CLASS 299

2 4,452,489
4 4,452,490
5 4,452,491
37 4,452,492

CLASS 301

37 SS 4,452,493

CLASS 303

6 C 4,452,494

CLASS 305

11 4,452,495
35 EB 4,452,496

CLASS 307

10 R 4,453,088
253 4,453,089
303 4,453,090
350 4,453,091
355 4,453,092
440 4,453,093
448 4,453,096
451 4,453,094
475 4,453,095

CLASS 308

187.1 4,452,497

CLASS 310

71 4,453,098
87 4,453,099
154 4,453,097
203 4,453,100
211 4,453,101
237 4,453,102
323 4,453,103
348 4,453,104
361 4,453,105

CLASS 312

216 4,452,498
223 4,452,499
236 4,452,500

CLASS 313

331 4,453,106
579 4,453,107

CLASS 315

5.18 4,453,108
219 4,453,109
241 P 4,453,110

CLASS 318

111 4,453,111
281 4,453,112
376 4,453,113
4,453,114
434 4,453,115
727 4,453,116
778 4,453,117
779 4,453,118

CLASS 320

39 4,453,119

CLASS 322

28 4,453,120

CLASS 323

226 4,453,121
300 4,453,122
324 4,453,123
347 4,453,124

CLASS 324

58.5 A 4,453,125
61 R 4,453,126
71.3 4,453,127
403 4,453,128
429 4,453,129

CLASS 330

51 4,453,130
97 4,453,131
107 4,453,132
149 4,453,133
255 4,453,134
295 4,453,135

CLASS 331

1 A 4,453,136
2 4,453,137
47 4,453,138
4,453,139
111 4,453,140
158 4,453,141

CLASS 333

26 4,453,142
28 R 4,453,143
140 4,453,144
174 4,453,145
212 4,453,146
219 4,453,147

CLASS 335

205 4,453,148
216 4,453,149

CLASS 336

234 4,453,150

CLASS 338

34 4,453,151
197 4,453,152
309 4,453,153

CLASS 339

91 R 4,452,501
99 R 4,452,502
177 R 4,452,503
263 R 4,452,504

CLASS 340

289 4,453,155
310 R 4,453,156
347 AD 4,453,158
347 DD 4,453,157

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51 4,452,600

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D6—	29	274,102		13	274,118		50	274,135		84	274,189		134	274,165	D25—	22	274,158
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	201	274,108		341	274,124		181	274,140		139	274,183		23	274,169	D30—	4	274,152
D7—	39	274,109			274,125		316	274,141		199	274,182	D23—	36	274,168		43	274,151
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	337	274,111	D9—	301	274,128		32	274,144		7	274,179		61	274,164		48	274,148
	352	274,113		375	274,129		40	274,145		12	274,178		70	274,163		52	274,147
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